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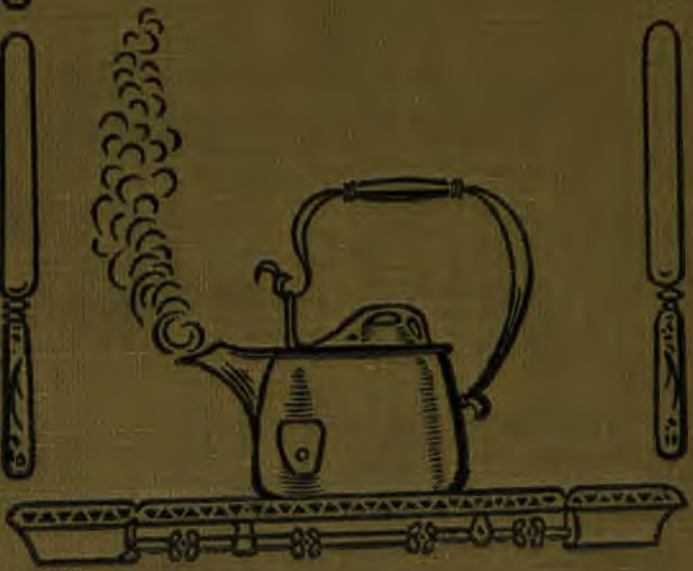
AUSTIN'S DOMESTIC SCIENCE

BOOK THREE



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DOMESTIC SCIENCE

BOOK THREE

BY

BERTHA J. AUSTIN

DIRECTOR OF DOMESTIC ARTS, ANDREWS INSTITUTE FOR GIRLS
WILLOUGHBY, OHIO

MATERIAL COLLECTED BY A COMMITTEE OF DOMESTIC SCIENCE TEACHERS COÖPERATING FROM DIFFERENT SECTIONS OF THE COUNTRY

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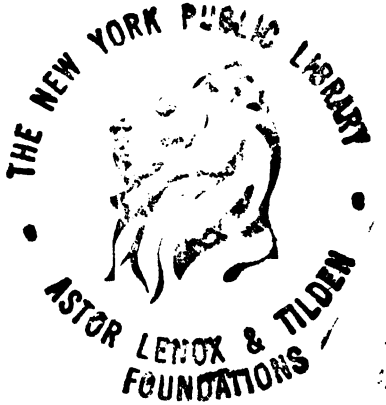

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PREFACE

This book is offered as the completion of a series of three books in Domestic Science for use in the public schools. The object of this course is to give thorough, practical training in cookery. To this end, the art rather than the science of cooking is emphasized. While the scientific principle underlying every combination of ingredients and every operation of every lesson from the first lesson in the first book of the series to the last one in the last book is carefully studied, the author has planned the subject-matter in the belief that the girl becomes a skillful cook by intelligent cooking, not by over-elaboration of chemical laboratory experiments. Every lesson is a careful demonstration of *what to do, how to do it,* and *why it is done.* Any girl completing this course should be able to supply satisfactorily the culinary needs of the average household.

The lay-out of each lesson is so planned as to secure the greatest possible result from the expenditure of time. Hence no time is wasted having the student read the lesson through to find what utensils she needs for the work. This would take time that can be more profitably spent in cooking.

In that part of the course comprised in the first two books, all the cooking necessary for the average menu for the three daily meals is taught. Vegetables, eggs, cakes, pastry, meats, and bread have received full treatment.

The subjects requiring more maturity and judgment have been left to this, the last book of the series. Among these are preservation of foods, including canning, preserving, jelly-making, and pickling, the chemistry of foods, food values, studies in dietetics, and invalid cookery. Practical problems, for instance, those involving computation of the comparative

cost of home preservation of foods and the factory-canned product, are a feature of this book.

Attention may also be called to the chapter on household accounting in which the girl is taught a simple way to keep a businesslike account of the expenditures of the household, the payment of accounts and the use of a few general business terms, such as checks, statements, and receipts.

Among the items of interest in the Appendix may be found a list of French and also Spanish words and phrases used in connection with the preparation and serving of foods, with their pronunciation and meaning.

Throughout the preparation of the subject-matter of this course, three watchwords have been the guide — economy, nutrition, and variety. It has been recognized that economy at the expense of nutrition is the greatest extravagance, but nutrition with intelligent economy and variety is both desirable and possible.

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Before any daughter has left our home for one of her own, she has been taught all I know of cleanliness about a house, cookery, sewing, tending the sick, bathing and dressing the new born. She has to bake bread, pie, cake, and cook any meat or vegetable we have. She has had her bolt of muslin to make as she chose for her bedding, and linen for her underclothing. The quilts she pieced and the blankets she wove have been hers. All of them have been as well provided for as we could afford. They can knit, darn, patch, tuck, hem and embroider, set a hen and plant a garden. I go on a vacation and leave each of them to keep house for her father a month, before she enters a home of her own. They are strong, healthy girls. I hope all of them are making a good showing at being useful women and I know they are happy, so far at least.

From *Laddie*, by GENE STRATTON PORTER.

DOMESTIC SCIENCE

BOOK THREE

CANNING AND PRESERVING

Lesson I

THE PRESERVATION OF FRUITS AND VEGETABLES (Reading)

Place in diet:

Fruits and vegetables are very important to the diet as they furnish bulk to the food, which increases the peristaltic movement during the process of digestion. They are at the same time valuable for the palatability and flavor they impart to other foods. While they have not so great food value as meat and eggs, they are indispensable to the proper assimilation of nutriment from the more concentrated foods. They enable the digestive juices to penetrate all parts of the food, their cellulose or woody structure being most active in this process of digestion.

Importance of preserving:

As the season for fresh fruits and vegetables is short, it is desirable to use some method of treating them so that they may be kept for a longer time in usable condition. Any method whereby this can be done is called preserving. Too much cannot be said about the value of preserving foods. There is no reason why the ordinary household should not have every kind of vegetable and fruit for table use even during the seasons when they cannot be obtained in a fresh condition or are too expensive to be bought fresh.

Vegetables preserved as easily as fruits:

It is very common to can fruit and tomatoes, but much less common to preserve carrots, peas, beans, corn, and the like. If the proper care is taken there should be no difficulty about the latter, and every housewife should make it her duty to understand and undertake the work.

Change in form:

In the cooking of fruits and vegetables the most noticeable change which takes place is in the form. The heat causes the water of the cells to expand and break down the cellular walls, softening the texture and making it more palatable and easily acted upon by the digestive fluids. This change is important in hard fruits, like quinces and apples, and in vegetables that are unpalatable in the raw state.

Change in color:

The color of fruits and vegetables is often altered by cooking. This is an undesirable change and should be minimized by care in the selection of cooking utensils, the control of heat, and in using care not to cook them too long.

Change in taste:

While cooking often increases the palatability of vegetables, it is apt to change the flavor. This is due to the loss of the volatile essential oils, which are so characteristic of the raw foods and which give flavor and odor to them.

Acid contents:

It sometimes appears that cooked fruit is either less or more acid than in its raw state, but experiments prove that the acid content is really but slightly changed. In one case the sugar seems to mask the acid flavor; in the other case the acid taste is more noticeable because the cooked fruit contains the skins, which have a higher acid content than the pulp, and the raw fruit is usually eaten without the skins. When fruit is boiled, some of the volatile acid may pass off in the steam; when it is cooked in sugar, the sugar changes to the *invert* form, as was explained in Book Two.

Food value not impaired:

Since none or very little of the nutrients is lost in cooking, and since cooking often increases the palatability of vegetable foods, their food value is not impaired by this method of preserving.

Causes of spoiling:

The fermentation, or decomposition, of imperfectly preserved fruits and vegetables has been attributed to various causes. At one time it was thought that the decomposition of food was caused by the oxygen of the air, and that if the air was excluded and gentle heat applied, there would be a fusion of the ferments and some of the principal constitutents in such a manner that the ferments would lose their power, and the decomposition would not take place.

Bacteria the only cause:

Now we know that it is not the oxygen of the air, but the bacteria and other microscopic organisms of the air which cause the decomposition of food. It has been proved by the investigations of scientists that if food is perfectly sterilized, that is, if all the bacteria and spores in it have been killed so that they cannot reproduce and carry on their work of decomposition, and the food is then placed in sterilized receptacles and the openings of the receptacles are plugged with sterilized cotton so that the air itself, but not the bacteria, can pass through, the food will not spoil. Is this not conclusive proof that neither air nor oxygen, but the bacteria in the air cause the changes known as decomposition of food?

Character of bacteria:

Bacteria exist not only in the air, but also in the soil, in all animal and vegetable matter, and even in living bodies. They are one-celled bodies and the smallest living organisms known, being so small that they can be seen only with the aid of a miscroscope. They reproduce in the most simple manner, a cell simply lengthening out, then separating in the middle to form two cells in place of one. If the conditions are favorable,

that is, if moisture, warmth, and proper food are present, each cell will divide, the work going on so rapidly that inside of twenty-four hours one bacterium, or one cell, may give rise to as many as seventeen millions of cells, each one of which will give rise to as many more, and so on.

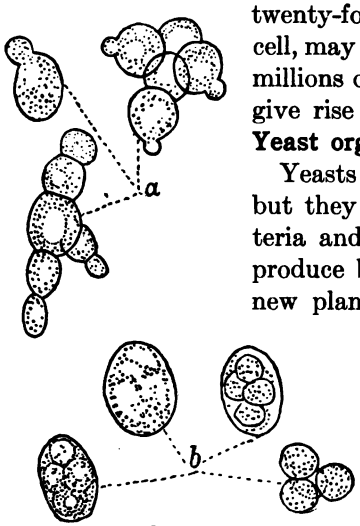

FIG. 1.—Yeast Cells. (*a*) Ordinary bread yeast. (*b*) Spore formation; four spores in a sac

Yeast organisms:

Yeasts are also one-celled organisms, but they develop less rapidly than bacteria and in a different manner. They produce buds which break off and form new plants. They and some bacteria produce spores, which are bodies like the dried seeds of plants. These spores will remain alive under conditions which would kill the organism from which they came, and so are used to tide the parent over adverse or unfavorable conditions, such as great heat, cold, dryness, or a lack of the food necessary to sustain life.

Live without air:

Nearly all bacteria require oxygen, but there are some kinds that will grow without it, so even though air, which contains oxygen, is excluded, if one of this kind of bacteria is closed up with food it will grow and cause the decomposition of the food.

Bacteria in protein foods:

Bacteria grow best in foods which contain a large amount of protein, if warmth and moisture are present. Meats, fish, eggs, milk, peas, beans, and lentils are, therefore, hard to preserve because of their great richness in protein.

Flourish in dilute sugar solution:

Bacteria grow rapidly in a wet substance containing a small amount of sugar, but they do not develop at all if a large percen-

tage of sugar is present. Yeasts also flourish in dilute sugar solutions, especially if the latter contain some protein and mineral matter. Fruits, which are generally acid, do not furnish a good food for bacteria, but they are often fermented by yeasts.

Preservation by boiling:

Each kind of yeast or bacteria has a certain temperature at which it grows best; each has also a temperature at which it cannot grow, and another temperature at which it cannot live. Most kinds of bacteria are destroyed if exposed for ten or fifteen minutes to a boiling temperature. If the bacteria are of the spore-producing type, however, they require a continued cooking for an hour or more to kill the spores and render the food sterile. Yeasts and yeast spores are more easily destroyed by heat than are bacterial spores, which require a temperature greater than that of boiling water for a short time under pressure, or a boiling temperature for two hours or more.

Molds:

Yeasts and bacteria are not the only enemies to be guarded against in caring for food. All house-keepers have made the discovery that in warm, damp weather there is a substance, known as mold, which grows rapidly on all starchy foods, such as bread, rice, potato, fresh and canned fruits. These molds develop from tiny spores which are abundant everywhere in the air, and being very light, are easily blown about by the wind. Because they are a little heavier than air they settle on the floor, shelves, tables, and walls and are easily set in motion again when a feather duster or broom is used. When one of the spores comes in contact with a moist substance which furnishes suitable food for it, it sends out a tiny thread, which in turn sends out many branches, and soon works its way throughout the whole food mass. It does not take long for more spores to be produced and so the work of reproduction is carried on indefinitely till all the food matter is used up. When molds first begin to grow, they are white and hardly apparent, but as they grow they become darker.

Action of molds:

Molds do not usually cause canned foods to ferment, but they commonly cause raw fruits to decay. They do not penetrate to any great depth in preserves or jelly or into liquid or semi-liquid substances, but if the temperature is suitable they will penetrate the whole mass of a moist, solid substance, such as bread or cake. A temperature from a little below the boiling point to the boiling point will destroy a mold spore. After being subjected to such a temperature, a food should be covered and set in a cool dry place to protect it from mold.

FIG. 2.— Mold from a Decaying Plum, producing spores (the little oval sections)

Theories involved in preservation:

Conn says, "Putrefaction is always due to the growth of micro-organisms, hence all types of putrefaction and decay may be prevented by stopping the growth of such organisms and delayed by decreasing its rapidity."

Wiley states that the decay of vegetable substances is due to the action of certain ferments, either organic or inorganic, which act as agents in securing the oxidation and decay of the organic material. If the action of these organisms can be prevented or inhibited, the food material will remain for a certain length of time, not yet definitely determined, in an excellent, almost perfect, state of preservation and without losing, notably, any of its nutritive or palatable properties.

Furthermore, Anna Barrows, a noted expert in cooking, says that the essential points in canning fruit may be summed up in very few words: "All that is necessary is to have the fruit and

everything that comes in contact with it sterilized and then to keep the air away from it. That is, the fruit and whatever it touches must be raised to a sufficiently high temperature to destroy any micro-organism already there that would cause change of form or decay. This being done, care must be taken that no others are allowed to enter through the air."

Agents of preservation:

I. Heat and exclusion of air
   (a) Canning
      1. Cooking and putting into sterilized cans and sealing
      2. Steaming in cans, then sealing
      3. Putting into cans and cooking in the oven
      4. Cooking above 212° F. for three successive days

II. Heat and partial exclusion of air
   (a) Canning and sealing with sterilized cotton

III. Exclusion of air
   (a) Packing; (b) Wrapping; (c) Burying in fats, water-glass, or salt

IV. Antiseptics
   (a) Chemicals
      Borax, boracic acid, salicylic acid, formalin
   (b) Non-poisonous preservatives
      1. Sugar
      2. Salt
      3. Brine
      4. Vinegar
      5. Spices
      6. Hops

V. Drying

VI. Drying and smoking

VII. Salting and smoking

VIII. Use of low temperature
   (a) Cold storage
   (b) Ice chest
   (c) Cellar
   (d) Running water
   (e) Spring house
   (f) Submerging in ice-water
   (g) Suspension in deep well
   (h) Packing in damp leaves

Lesson II

Canning Tomatoes

Fig. 3.— Utensils in Canning

Materials used:

Tomatoes	water	2 tp salt to 1 pt tomatoes

Utensils needed:

Pint can or jar and cover	paring knife
rubber ring for jar	fork
sterilizing kettle with rack	strainer or wire basket
kettle or large pan with cloth	large bowl
dish pan	spoon
saucepan	funnel

Operations:

1. Fit the rubber and cover on the jar; fill the jar with water; screw on the cover and invert the jar to see that it does not leak. If it does leak, try another cover or rubber and keep on till the jar is made perfectly air-tight.

2. Wash the jar and cover in strong, soapy, hot water, rinse, and fill the jar with cold water; place it on a rack in a sterilizing kettle or in the large kettle or pan on the cloth.

It may be convenient to sterilize several jars in one kettle. Place them so that they do not touch each other, and so that they rest on the rack or cloth instead of directly on the bottom of the kettle. Sometimes an ordinary wash-boiler is most convenient for use as a sterilizing kettle. A rack of wood slats, willow, or wire may be fitted into the bottom to keep the jars from touching the bottom of the kettle and to allow the boiling water to circulate freely about the jars.

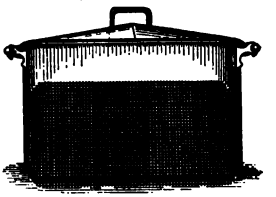

FIG. 4.—Kettle with False Bottom

After filling the jars with cold water and placing them in the sterilizing kettle, surround them with cold water, which should be gradually heated to the boiling point. The covers may be placed in the kettle also, but in such a way that they do not touch the jars. The rubbers must not be boiled, for boiling is injurious to rubber, but should be dipped into hot water just before using. Let the jars and covers remain in the boiling water till they are ready to be used. All spoons, funnels, or any other utensil used should also be sterilized.

FIG. 5.— Filling a Jar

3. Wash the tomatoes.

4. If a wire basket is at hand, place the tomatoes in it, then lower it into the boiling water for a few minutes. This will loosen the skins. If it is not possible or convenient to use the wire basket, set the strainer in the dishpan or large bowl, put the tomatoes in it and pour the boiling water over them.

5. Remove the loosened skins and the stems, and quarter the tomatoes.

6. Put the quartered tomatoes into the saucepan with a very little water and the salt. Heat till all are thoroughly boiled, stirring as little as possible.

Fig. 6.— Tightening the Cover

7. Place a little hot water in a pan; take a jar from the sterilizing kettle, place the rubber on it and the sterilized funnel in it and fill the jar with the boiling tomato. Fill the jar to overflowing, using boiling water if there is not enough of the tomato

8. Place the sterilized cover on the jar and seal by screwing or clamping. If screw caps are used, they should be tightened after the jars cool. The jars should be inverted while cooling.

9. When the jars are cool, wash them on the outside. Watch carefully for any sign of fermentation; if such signs appear, loosen the cap, remove the contents, and re-sterilize both the tomatoes and the jars.

Principles:

Heating the tomatoes to the boiling point kills all the bacteria they may contain. If care is not taken that the right temperature is reached throughout the mass, some bacteria may remain alive and cause the decomposition of the whole can of food.

Since the air about us is so full of these tiny organisms, all utensils must have more or less on their surfaces. If the sterilized food, that is, food in which all life and cause of life have been destroyed, is placed in utensils or receptacles which are not sterile, the whole mass will become contaminated. There-

fore it is of the gravest importance that everything used in preserving food *must be completely sterilized* if the food is to keep.

If the utensils and food are free from bacterial life and the unsterilized air is allowed to reach them, they immediately become infected again. In the first place, great care should be taken that the floors and walls are as free as possible from spores. The room in which preserving is to be carried on should be thoroughly swept, the dust should be allowed to settle and then the whole room should be carefully dusted with a damp cloth. This should be done before any work with the fruit is begun.

As soon as the sterilized food has been placed in the sterilized jar, it should be sealed in order to keep out the air. This is the method of canning by exclusion of all air and application of heat.

If, instead of sealing the jars air-tight, sterilized cotton is used to seal the opening so that the air, but not the spores or germs of the air, can get to the food, decomposition will not occur. This is the method of preserving foods by applying heat and partly excluding the air. This method is much less satisfactory than the first and is not more convenient.

When the jars are taken from the sterilizing kettle, they are, of course, very hot. If they are set on a cold surface, placed in a draft or in cold water, the sudden contraction caused by the contact with the cold will cause them to break. Therefore it is necessary to place them in a pan containing a little hot water. If the jars are cold and the boiling hot food is poured into them, the sudden expansion caused by the heat will also cause them to break. But placing the hot jars in a little hot water does away with this danger also; it is the only safe method to employ.

If there is not quite enough of the sterilized food to fill the jar to overflowing, and the jar is sealed without being filled, some unsterilized air will be sealed in the jar. What will result? If cold or warm water or uncooked or unsterilized food is added

to fill the can, the result may be equally unfortunate. Boiling water will be perfectly safe and should always be used in such a case.

As glass expands when heated and contracts when cool, even though the screw caps on the jars are tight on the hot jar, they may be too loose on the cold jars. By inverting the jars while cooling, if the caps do become loose, some of the juice will leak out. In such a case, the caps must be tightened and the jars watched *very* carefully to see whether fermentation sets in. If such is the case, if it has not gone too far, and with tomatoes it will not go too far if one is careful, reheating and resterilizing will probably save the food.

Only enameled, granite, porcelain-lined, or aluminum utensils should be used for cooking acid foods. For any method of preserving, tin or iron utensils should never be used. The acids of fruits and vegetables attack these metals, forming compounds which have very disagreeable odors, tastes, and colors.

Cleaning up:

1. If there is some of the cooked tomato left after filling the can, put it into an earthen or granite dish and set it where it will not spoil before it can be used.

2. Put all tomato skins and stems into the garbage pail. If they are in a pan of water, empty the whole mass into the sink strainer, let the solid skins drain, then dump them into the garbage pail or can. Never pour such garbage directly into the sink; it clots up the drain and makes the sink unsightly and much harder to clean.

3. In filling the jars and setting them to cool when filled, be sure to set them on pads. Do not set hot dishes on a varnished surface or on oil-cloth, because the dish will make a mark on the surface.

4. Wash all utensils in the usual manner and put them in their accustomed places.

5. Wash, rinse, and hang the towels and dishcloth to dry.

Lesson III

Canning Tomatoes by Steaming or Baking

Materials used:

Tomatoes
2 tp salt to 1 pt tomatoes
water

Utensils needed:

Same as in the previous lesson
silver knife
asbestos sheet or shallow pan
wooden vegetable masher

Operations:

1. Test the jar and cover.
2. Sterilize all utensils.
3. Remove the skins from part of the tomatoes, as directed in the previous lesson.
4. Slice these and cook them in just enough water to keep them from burning.
5. While the tomatoes are cooking, remove the skins from the rest or from enough to fill two pint cans when the tomatoes are whole.
6. When the sliced tomatoes have cooked till they are tender, remove them from the fire and put them through the strainer, using the vegetable masher.
7. Return the strained tomato to the saucepan and set it back on the fire.
8. Remove a jar from the sterilizing kettle and fill it at once with the skinned whole tomatoes.
9. Pour enough of the stewed, strained tomato into the jar to fill up the spaces left by the whole tomato.

Fig. 7.—Running Knife blade inside of Can

10. Run the silver knife blade or the handle of a silver spoon around inside of the can.

11. Place the jar in the sterilizing kettle again, having enough warm water in the kettle to reach about four inches above the rack. Place the cover loosely on the jar and if several jars are steamed in the same kettle, be sure they are placed so that they will not touch each other. (It is well to have cloth, straw, or some such substance packed about and between the jars so that they will not bump together when the water boils.) Cover the kettle.

12. Bring the water in the kettle to a boil and let it boil ten minutes.

13. Take the kettle from the fire, remove the cover, and let the steam escape.

14. Remove the can to a pan with two inches of hot water in it; remove the covers, add the salt, and fill the cans to overflowing with the boiling, strained tomato.

15. Seal the can and set it, inverted, away from the cold draft to cool. Tighten the caps as directed in the previous lesson.

16. Take another jar from the sterilizing kettle and fill it as directed above; let it remain uncovered and place it on the asbestos sheet or in the shallow pan of hot water in a moderate oven.

17. Let the tomatoes cook for half an hour; remove them to a pan of hot water, fill the pan to overflowing with the boiling-hot, strained tomato, and seal as above.

18. Any strained tomato that is left may be sealed in a sterilized jar, to be used as tomato sauce for meats.

Principles:

Either steaming or cooking fruit and vegetables in the oven is a very good method of canning. By either method, the shape, color, and flavor of the food canned are better retained than when it is cooked in the stew kettle before being put into the jars or cans.

In either case, the heat must be intense enough and continued long enough to sterilize the tomatoes completely. The boiling, strained tomato is sterilized and aids in heating and sterilizing the whole tomatoes.

Running the blade of a knife or the handle of a spoon around the inside of the jar gives the air a chance to escape from the jar; one cannot be too careful about excluding every bit of unsterilized air. A bubble of air no larger than a grain of wheat may contain hundreds of bacteria, and when one bacterium or one spore may, in a few days, cause a whole jar of food to spoil, it can be easily seen how dangerous a hundred are.

After the jars of tomato have been steamed and heated in the oven, if they are not filled to overflowing with the boiling tomato, air space will be left. The tomato, then, serves the same purpose here that the boiling water served with the stewed tomatoes of the previous lesson.

A very important factor to be considered in canning is the condition of the fruit or vegetables used. Vegetables should not be canned after they have matured and commenced to harden or to decay. Select firm, full-sized vegetables, of normal color and free from blemishes. It is always best to can them as soon as possible after picking. Any tomatoes that have spots or parts that must be cut off may be utilized by slicing the good parts and stewing them or using them for the strained sauce.

Cleaning up:

Observe the usual rules for cleaning up the desk and utensils.

PROBLEMS

1. If twenty quarts of canned tomatoes can be secured from one bushel of ripe tomatoes, what will be the cost of canning one-half bushel of tomatoes in one-quart glass jars if tomatoes are selling at $1.00 per bushel and the cans complete at 60¢ per dozen? Would the cost be greater or less, if pint jars were used, and how much, if they were selling at 50¢ per dozen?

2. How much would the cost be increased in the preceding problem, using quart jars, if the cost of fuel gas is included, gas costing $1.00 per 1000 cu. ft., and 120 cu. ft. being consumed?

3. If a standard brand of canned tomatoes can be purchased at $1.70 per dozen quarts, what may be considered the worth of the services of a house-maid, working ten hours per day, who cans one-half bushel of tomatoes in one hour, using the cost of home canning obtained in the preceding problem?

Lesson IV

Canning Corn

Materials used:

Ears of green corn salt water

Fig. 8.— Slashing Rows of Kernels

Utensils needed:

Jar with top and rubber ring
sterilizing kettle
bowl or granite pan
spoon
stiff brush
sharp knife

Operations:

1. Sterilize all utensils.
2. Remove the husks from the corn.
3. Remove the corn silks with a stiff brush.
4. Slash the rows of kernels through the middle of the kernels, then scrape off the grains of corn with the sharp knife, letting them fall into the bowl or, better, into a shallow granite pan.
5. Pack the sterilized can full of the kernels of corn.
6. Add salt, about 1 tp to a quart, and fill the jar to the top with cold water.
7. Put the rubber ring on the jar and set the top on loosely. If a spring-top jar is used, do not clamp the spring.
8. Place the jar in the sterilizing kettle and pour in

Fig. 9.— Cutting off the Kernels

about four inches of water; put the cover on the kettle; bring the water to the boiling point and boil for an hour.

9. Remove the cover of the boiler and let the steam escape. If a screw-top can be used, screw on the top so that no outside air can enter; if a spring-top is used, clamp the spring to seal the can. See Figure 16, page 36.

FIG. 10.—Spring-top Jar Unclamped

10. Leave the jar in the kettle or remove it and let it cool.

11. The next day, raise the spring or loosen the screw-top and boil the can again for an hour. Seal again.

12. Repeat on the third day, when the sterilization will be completed.

13. After two days, if the spring-top jar is used, test it by releasing the spring and lifting the jar by the top. If sterilization has not been completed or a tiny bit of decomposition has begun, the top will come off. The bacteria, if there are any unkilled, will form a gas which relieves the atmospheric pressure on the top and allows it to come off.

14. Since corn is very inexpensive, it is best to throw away all in the can if it has started to spoil. More expensive foods should be resterilized and not thrown away.

FIG. 11.—Testing Jar of Fruit

Principles:

The United States Department of Agriculture has shown that "the amount of sugar in the sweet varieties of corn diminishes very rapidly after the ear is pulled from the stalk; therefore in order to retain the original sweetness and flavor it is necessary to can corn very soon after it is pulled — within an hour if possible. Select the ears with full grains before they have begun to harden, as this is the period of greatest sugar content."

It is necessary to have only enough water in the steaming kettle to form steam and keep the kettle from becoming dry

during the cooking. The steam does the cooking or sterilizing of the food. Between each two heatings, the can must be sealed to prevent infection from the outside air. During the cooking the cans must be unsealed to relieve any pressure from steam that may form.

Corn, as well as beans, peas, and asparagus, all of which must be canned by the same method, contains spores which are peculiarly resistant to heat. The heat of the first cooking kills the active bacteria; the heat of the second day kills the bacteria which develop from the spores of the first day. The third heating may not be absolutely necessary, but is advisable, as it assures the killing of any bacteria that may have escaped the other two heatings, and renders sterilization complete. This is the method of canning by heating to the boiling temperature for three successive days.

In canning beans, select young and tender ones, string them, break into short lengths, pack in jars and proceed as with corn.

In canning asparagus, use only young, tender tips.

Cleaning up:

Observe the usual rules.

Lesson V

Thrift and Canned Foods (Reading)

Power of thrift:

There is no greater household virtue than thrift. It fills the larder on a small capital. A thrifty housewife was once heard to say that it was quite within the realm of possibility to keep clothes from wearing out. While it is not possible to keep the larder from becoming empty, it is possible and not too difficult to provide it with a variety of excellent food on about one-half what the average housewife usually expends upon her household supplies. This may sound like an injustice to the average housewife. But it must be remembered that the average housewife is comparatively young and untaught, and that it is only

recently that she has commenced to study household economics with the intention of applying scientific principles to her kitchen work.

Today the thrifty housewife preserves her fruits and vegetables when she can buy them at the lowest price. A hundred years ago she smoked her own hams, dried her own apples and green corn, made all manner of rich sweets and pickled condiments out of both fruits and vegetables, though she knew little about the principles of preserving such foods as they are practiced today.

Modern housewife's inheritance:

But the early housewife was an admirable example to follow in the economy and thrift that shone from every nook and corner of her home and made her table bountiful and wholesome, if not in some of the methods of her housekeeping which are now meaningless and obsolete. The housewife of today is enabled to profit by her great-grandmother's successes and also by the scientific discoveries and the great number of inventions that have placed a wide gap between the processes of cooking then and now. However, the modern housewife is finding it just a little difficult to overcome some of the difficulties due to the neglect of housekeeping as an art by many of the more intelligent women of the past generation or two. Interest in housekeeping had to be revived and it has been revived with a will. Since the more intelligent women of the land have begun to realize that, after all, we are what we eat—that our muscular and nervous systems are made out of the food we consume, and that food even more than environment makes or mars the individual, they have turned their attention to the science of cooking, literally reviving and making it new.

Value of recipes:

Unlike the earlier cooks, the new ones use recipes. Fifty years ago, the cookery book was despised; now it is considered a part of the necessary equipment for the kitchen. It is true that in the science of cookery one has to deal with materials

that cannot be said to have a fixed value, yet their fluctuations are of a sort that can be averaged, and the cook book to be reliable must use the average value of the ingredients in designating the quantity required.

Must know fundamentals:

At the same time, the accomplished cook is so thoroughly equipped with a knowledge of the fundamentals of cooking that she can make most of the dishes used in the day's routine without recourse to the pages of her cook book. It is only on baking day and when trying a new dish that she refers to the book. The value of a tablespoonful of flour for thickening soups is about the same in all climates and under most conditions and the effect of a beaten egg or teaspoonful of cornstarch upon a cream or custard is practically the same always. The cook who knows her materials will make no mistake in combining them even if she should be tempted to try a newspaper recipe from which a cup of milk or a cup of flour has been carelessly omitted. She will know intuitively what is missing and will supply it without a moment's hesitation.

Thrift is knowledge and care:

It is this knowledge of the fundamentals — of the action of the various chemicals used in cooking, and of the changes in foods due to their combination — that is the basis of economical cooking. We might say that thrift is really nothing but knowledge and care.

Importance of taking pains:

This kind of thrift becomes immensely important when applied to canning and preserving. The loss of an entrée or other single dish in preparation for a meal is slight compared to that of several cans of fruit or vegetables. And yet the slightest deviation from a fixed rule may cause an entire day's canning to spoil and the loss of both the time and labor, together with the materials used. For this reason, it is highly important that the canning process be conducted by someone who thoroughly understands the principles involved, who knows instinctively

as well as because she has been told, why the jars must be sterilized with boiling water, why this treatment must be given likewise to the covers, why it is not well to screw the latter on too tight just at first, why a draft of cold air will often cause a hot can to break, and the whys and wherefores of all the minor as well as major processes in canning fruit and vegetables.

Great saving in home canning:

Many housewives consider canning so great a hardship that when winter comes they either go without the fruits and vegetables that could be obtained in such abundance and so cheaply during the summer months or else they buy fresh or canned foods. If they buy fresh foods, they must pay hot-house prices. If they buy canned foods, they are apt to pay considerably more than they would have paid for the fresh materials in their season. Neither is there the satisfaction in buying canned goods that there is in canning them at home. While the pure food laws have guaranteed the contents of the tin cans and their freedom from dyes and coloring matters, still there is no assurance that the same fastidious cleanliness has been observed in the process as that which the housewife regards as necessary when the process is conducted in her own home.

Real and mistaken thrift:

Old-fashioned rural housewives have prided themselves on the number of years their fruit has kept, some of them accumulating hundreds of jars against a possible scarcity. They have proudly exhibited jars of jelly and preserves ten or a dozen years old. Evidently the expected emergency never has occurred. The custom is not to be recommended. Fruit is not so good if kept over a season. If it passes through a second summer, it is apt to become discolored, losing its brightness and its flavor. The thrifty housewife uses her supplies while they are in the best possible condition. She who hoards them beyond this point verges on miserliness and is therefore even poorer than she who spends too freely.

Lesson VI

Canning Crab Apples

Materials used:

1 qt crab apples ½ c sugar 1 c water

Utensils needed:

Saucepan
measuring cup
spoon
knife
sterilizing kettle
2 cans, covers, and rubbers
dishpan
funnel

Operation:

1. Test and sterilize the cans and covers.

2. Wash the apples and cut off the blossom end, being careful not to cut the skin. Leave the stems on. If possible, use a silver knife for cutting the fruit.

3. Put the sugar and water into the saucepan, place the pan over the fire, and stir till the sugar dissolves. If a scum forms, skim it off.

4. When the sirup has boiled a short time, put half of the apples, whole, into it. Cook them very slowly till the apples are tender; it is safest to place an asbestos mat under the saucepan. The cooking should go on so slowly that the apple skins will not be broken; the use of the asbestos mat aids in this.

5. While the apples are being cooked in the saucepan, fill one of the sterilized cans, using the usual precautions when handling hot glass cans, with the rest of the uncooked, whole crabs; add enough boiling water to fill the can; use a spoon handle or knife to let all air bubbles escape.

6. Place the cover loosely on the can and then place the can in the steamer or sterilizing kettle in warm water.

7. Bring the water to a boil and let it boil ten minutes.

8. Remove the kettle, take out the can, fill it to overflowing with boiling water and seal in the usual way, according to the kind of jar used.

9. When the apples in the saucepan are tender, pour them into the other sterilized jar (using the usual precautions), filling it to overflowing; if necessary, add hot water to finish filling it.

10. Seal the jars in the usual way and set both jars away from a draft to cool.

Principles:

"The selection of fruit is one of the first steps in obtaining successful results. The flavor of fruit is not developed until it is fully ripe, but the time at which the fruit is at its best for canning or jelly-making is just before it is perfectly ripe. All fruits should, if possible, be freshly picked for preserving, canning and jelly-making. No imperfect fruit should be canned or preserved."

The steamed apples are to be used later for making jelly; for this reason they are sweetened very little in the canning. It is often inconvenient for the housewife to find time to make as much apple jelly as she wishes while the apples are in the proper condition; to overcome this difficulty, she may use this most simple way of canning the crabs, it not being necessary even to add sugar; and later on, when the apple season is over and she has plenty of time, she can proceed to make her jelly with very little trouble.

Maria Parloa, in her bulletin on *Canned Fruits, Preserves and Jellies*, says, "Such sirups as are used in canning and preserving are made with varying proportions of water and sugar. When the proportion of sugar is large and that of the water small, the sirup is said to be heavy. When the water predominates, the sirup is light."

There are several methods of measuring the proportion of sugar in a sirup. The most scientific and accurate is with the sirup gauge. Careful measurement or weighing is, however, quite satisfactory for all ordinary work if the sirup need not be boiled a long time. In boiling, the water evaporates and the sirup grows thicker and richer. The amount of evaporation

depends upon the surface exposed and the pressure of the atmosphere. For example, if a large quantity of sirup is boiled in a deep kettle, the evaporation is rapid. If the same quantity of sirup is boiled the same length of time in a broad, shallow kettle, the water evaporates more rapidly and the sirup is thicker and heavier. If a given quantity of sirup is boiled the same length of time in a high altitude, Colorado, for example, and at the sea level, it is found that the sirup boiled in Colorado is thicker and less in volume than that boiled at the sea level. From this it will be seen that it is difficult to say what proportion of sugar a sirup will contain after it has been boiling ten or more minutes. But by the use of the sirup gauge the proportion of sugar in a sirup may be ascertained at any stage of the boiling. After all, however, it is possible to measure sugar and water so that the percentage of sugar when the sirup begins to boil may be known.

The following statement gives the percentage of sugar at the time when the sirup has been boiling one minute and also what kind of sirup is suitable for the various kinds of fruit:

One pint of sugar and one gill of water give sirup of 40° density. Use for preserved strawberries and cherries.

One pint of sugar and one-half pint of water give sirup of 32° density.

One pint of sugar and three gills of water give sirup of 28° density. Use either this or the preceding for preserved peaches, plums, quinces, currants, etc.

One pint of sugar and one pint of water give sirup of 24° density. Use for canned acid fruits.

One pint of sugar and one and one-half pints of water give sirup of 17° density.

One pint of sugar and two pints of water give sirup of 14° density. Use either of these two light sirups for canned pears, peaches, sweet plums and cherries, raspberries, blueberries, and blackberries.

The lightest sirups may be used for filling the jars after they are taken from the oven or boiler. The process of making a sirup is very simple, but there are a few points that must be observed if sirup and fruit are to be perfect.

Put the sugar and water in the saucepan and stir on the stove until all the sugar is dissolved. Heat slowly to the boiling point and boil gently without stirring. The length of time that the sirup should boil will depend upon how rich it is to be. All sirups are better for boiling from ten to thirty minutes. If rich sirups are boiled hard, jarred, or stirred, they are apt to crystallize. The sirup may be made a day or two in advance of canning time. The light sirups will not keep long unless sealed, but the heavy sirups keep if well covered.

The sirup gauge is a graduated tube with a weighted bulb that registers from 0° to 50° which is employed to determine the quantity of sugar contained in a sirup. If this gauge is placed in pure water, the bulb will rest on the bottom of the cylinder or other container. If sugar be dissolved in the water, the gauge will begin to float. The more sugar there is dissolved in the water the higher the gauge will rise. In making tests, it is essential that the sirup should be deep enough to reach the zero point of the gauge. If a glass cylinder holding about half a gill is filled to about two-thirds its height, and the gauge is then placed in the cylinder, the quantity of sugar in the sirup will be registered on the gauge.

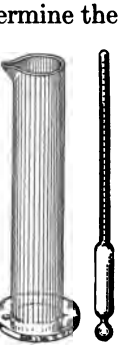

FIG. 12.—Sirup Gauge

In making sirups for canning and preserving fruits, the exact amount of sugar in a sirup may be ascertained at any stage in boiling and the sirup be made heavier by adding sugar or lighter by adding water, as the case demands.

What is there about fruit that makes it better to use a silver knife for cutting it? What vegetable contains a similar substance?

Cleaning up:

1. If there is a little more than enough of the sweetened, cooked apple sauce to fill the can, the surplus may be put into a suitable dish, set to cool, and used as sauce before it spoils.

2. As fruits stain, holders, instead of the dish towel or dishcloth, should be used for handling the hot dishes.

Additional Recipes

Canned Baked Apples

Wash and core good, sound, tart baking apples, fill the cavities with sugar and bake until tender in a pan with a very little water. Pack the baked fruit in hot, sterile jars and fill the jars with a sirup made of equal parts of water and sugar. Seal the jars.

PROBLEMS

1. Assuming that there is no waste in canning, what will it cost to fill ten quart cans with crab apples when the apples can be purchased at the rate of 75¢ per bushel and sugar at the rate of sixteen pounds for $1.00?

2. What will it cost to can eight quarts of crab apples at the prices given in problem one if 12½ per cent is allowed for waste?

Lesson VII

Canning Peaches

Materials used:

4 good-sized peaches — 1 c sugar — 2 c water

Utensils needed:

Usual sterilizing utensils
saucepan
1 pint can with cover and rubber ring
measuring cup
spoon
large bowl, dishpan, or large kettle
sieve or wire basket
paring knife
funnel

Operations:

1. Sterilize all utensils.

2. Put the peaches into the wire basket and lower them into the bowl, pan, or kettle of boiling water; this method is most practicable for home work. In school, put the peaches into the strainer, put the strainer into the bowl, and pour boiling water over the peaches. After three minutes, remove the peaches by lifting out the basket or strainer.

3. Plunge the basket or strainer for a short time into cold water.

4. Remove the skins and cut the skinned peaches into halves, cutting through the stem and blossom end.

5. Remove all but one stone.

6. Place the sugar and water in the saucepan and make a sirup according to previous directions.

7. Put the peaches into the sirup, set the saucepan over a mat, and cook slowly till the peaches are so tender that they can be easily pierced and are somewhat transparent.

8. Remove the can from the sterilizing kettle, observing the precautions given in the former lesson, and fill it with the peaches and sirup. If necessary, fill it to overflowing with boiling water. Try to arrange the halves of the peaches with the centers toward the outside of the can, and to have the one stone showing. Seal the can and set it aside to cool.

Principles:

Peaches are not a very hard fruit, hence they readily fall apart when cooked. Does this falling apart impair their nutritive value? Why was care taken, in canning the crab apples, not to break the skins? Because peaches are so soft and fall apart so readily, they are best cooked in a sirup. The sirup has a hardening effect upon the fruit and thus helps to keep it in shape.

Leaving the stone in gives a different, and to some, a desirable flavor to the peaches. Instead of leaving in the whole stones, the meats are sometimes removed and cooked in the sirup, then added to the fruit. This gives a decidedly different, but very good flavor.

After canned vegetables and fruits are cool and have been thoroughly tested to make sure that they are securely sealed and that the sterilization has been so complete that no fermentation will take place, the cans should, after being carefully wiped with a damp cloth, be labeled and set in a cool, dark place; they retain their color better if not kept in the light. Why is it desirable to retain as much as possible of the natural color of the fruit or vegetable?

Kinds of cans used in canning:

Glass is the most satisfactory material from which to make jars for household canning of food. Tin cans, even though they are lacquered, are almost sure to be unsatisfactory because

FIG. 13.—Ordinary Screw-top Jar

FIG. 14.—Improved Screw-top Jar

FIG. 15.—Lacquered Metal-top Jar

FIG. 16.—Position of Spring during Sterilization

FIG. 17.—Position of Spring after Sterilization

of their solubility in fruit and vegetable juices. The amount of tin usually dissolved may not prove really injurious, but it is usually large enough to be detected because of the undesirable color, odor, and taste it gives. For commercial canning, the tin cans are best, because they can stand rough handling in shipping without fear of breakage.

From the economical standpoint, also, glass cans are preferable for home use. Tin cans can never be used a second time, but if the proper care is taken, there is no reason why glass jars should not last indefinitely and be used as many times as desired.

The most common kind of glass jar now in the market is the ordinary screw-top jar. These jars are cheap, and for that

very reason are often not economical, because the glass used in them is of a poor quality. The breakage is large and the tops do not last well. The tops also afford a good refuge for germs and are hard to sterilize.

There is a new type of screw-top jar which has a glass top held in place by a metal cover which, like the ordinary screw cap, is screwed down over the neck of the jar. If the sterilization has been properly carried on, all or practically all of the air will be driven out of the jar by the steam. This steam condenses when it cools, and water formed from it trickles down into the jar. A vacuum is thus formed in the space between the top of the fruit and the cover, where the steam had been. This vacuum clamps down the glass top against the rubber ring and so seals the jar. If the metal cap is then removed, the pressure of the outside air will still hold the glass top safely in place.

Some glass jars are provided with lacquered metal tops, the groove around the edge of the top holding a substance which melts during the heat of canning and forms a seal to take the place of the rubber ring. In order to be removed, these tops must be punctured and so can be used but once. Are they economical?

The most satisfactory jars are those having the spring top. These have a glass top and rubber ring held in place by a simple wire spring.

Cleaning up:

1. Scour all discolored or stained utensils.
2. Observe the usual rules.

PROBLEMS

1. If there is a loss of 37½ per cent in volume in canning peaches, how many quarts can be secured from one bushel? What is the cost per quart when peaches are selling at $2.00 per bushel and sugar at sixteen pounds for $1.00?

2. What would be the increased cost in the preceding problem if 480 cu. ft. of gas were consumed at the rate of $1.00 per 1000 cu. ft. and labor can be secured at 12½¢ per hour and six hours were required to complete the work?

Lesson VIII

Preserved Pears

Materials used:

2 medium-sized pears $1\frac{1}{2}$ c water $1\frac{1}{2}$ c sugar

Utensils needed:

Bowl or dishpan
sterilizing kettle
saucepan
strainer
measuring cup
spoon and fork
paring knife
small jar or tumbler

Operations:

1. Sterilize the utensils.
2. Wash and pare the pears; cut them lengthwise into about eight pieces; remove the core.

Fig. 18.— Cutting Pears

3. Cook the pears in the saucepan in the cup and a half of water till soft.
4. Place the strainer over the clean bowl and turn the pear sauce into it; let the sliced pears drain a short time.
5. Return the water in which the pears were cooked to the saucepan and add to it the cup and a half of sugar.
6. Make a sirup in the usual manner from this sugar and water.
7. Set the saucepan on a mat over the fire, return the cooked pears to it, and cook them very slowly in the sirup till they are transparent and the sirup is of the consistency of honey. The sirup will darken, but less if cooked slowly than if cooked rapidly.
8. When the proper stage has been reached, remove the saucepan from the fire and pour the preserves into a small jar or tumbler and set aside to cool.

9. When it is cool, label, cover securely, and set it in a cool, dark place.

Principles:

Preserves are not so wholesome as other canned foods because of the great amount of sugar which they contain. Sugar is a very necessary and a very excellent source of heat and energy when used in the right proportions; but when taken in too large amounts it is likely to cause trouble because of the ease with which it ferments in the digestive tract. The large amount of sugar entirely destroys the original flavor of preserved fruits. Because they are so unwholesome, preserved foods should be served only occasionally and in small amounts.

Preserved fruit does not need to be sealed to keep it from bacterial or yeast fermentation, because the large amount of sugar is unfavorable to their growth; but because molds grow well on moist, sugary substances exposed to the air, preserves should be well covered.

Because pears are a hard fruit they must be cooked till soft, but not mushy, in clear water before being put into the sirup. As has been stated, the sugar of the sirup helps in hardening the fruit so that it may keep its shape, even when cooked for hours.

Some of the fruit juice, flavor, and soluble nutrients necessarily dissolve in the water in which the fruit is cooked. To save these nutrients and the flavor, the same water should be used in the sirup.

When soft fruits and berries are preserved, the sirup should be cooked alone till of the consistency desired for the final product, then the prepared fruit should be added and cooked only long enough to sterilize it and evaporate the water added by its juices.

Pears may be canned by the method used for canning peaches.

Cleaning up:

1. Use hot water for soaking sirupy utensils.
2. Follow the usual rules for washing and putting away all utensils used.

Supplementary Recipes

Tomato Preserves

1 lb yellow pear tomatoes
1 lb sugar
2 oz preserved Canton ginger
2 lemons

Wipe the tomatoes, cover with boiling water and let them stand until the skins may be easily removed. Add the sugar, cover, and let them stand over night. In the morning, pour off the syrup and boil it until quite thick; skim, then add the tomatoes, ginger, and lemons, which have been sliced and the seeds removed. Cook until the tomatoes have a clarified appearance.

Preserved Melon Rind

Pare and cut in strips the rind of ripe melons. Soak in alum water to cover, allowing two tp powdered alum to each quart of water. Heat gradually to the boiling point and cook slowly ten minutes. Drain, cover with ice water, and let them stand two hours; again drain, and dry between towels. Weigh, allowing one pound of sugar to each pound of fruit, and one cup of water to each pound of sugar. Boil the sugar and water ten minutes. Add the melon rinds, and cook until they are tender. Remove the rinds to a stone jar, and cover them with the sirup. Two lemons cut in slices may be cooked ten minutes in the sirup.

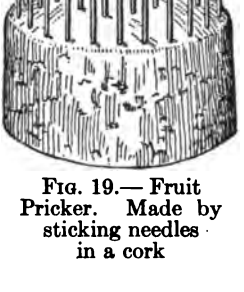

Fig. 19.— Fruit Pricker. Made by sticking needles in a cork

Plum Preserves

4 qt of green gages or other plums
2 qt sugar
1 pt water

Prick the fruit and put it in a preserving kettle. Cover generously with cold water. Heat to the boiling point and boil gently for five minutes. Drain well.

Put the sugar and water in a preserving kettle and stir over the fire until the sugar is dissolved. Boil five minutes, skimming well. Put the drained green gages in this sirup and cook gently for twenty minutes. Put in sterilized jars.

Fruit Preserved in Grape Juice

Any kind of fruit may be preserved by the following method, but it is especially good for pears, apples, and sweet plums. No sugar need be used.

Boil six quarts of grape juice in an open preserving kettle until it is reduced to four quarts. Have the fruit washed and pared, and, if apples or pears are used, quartered and cored. Put the prepared fruit in a preserving kettle and cover generously with the boiled grape juice. Boil gently until the fruit is clear and tender, then put into sterilized jars.

Grape Conserve

A basket of grapes, 1½ pt sugar, 1½ lb seeded raisins, ½ lb walnut meats. Remove the pulp from grapes, boil five minutes. Put through a colander to remove the seeds, and boil. Add the raisins, sugar, and nut meats chopped fine and boil about thirty minutes, until thick. This is delicious either with meats or plain blanc mange.

"A conserve is a kind of preserve made from a mixture of fruits with or without the addition of some other material, such as nuts. Various combinations of fruits may be made into toothsome relishes under the name conserve. For example, strawberries may be combined with orange pulp, pineapple, or rhubarb, in varying proportions, to make conserves of delicious taste and beautiful color."

Spiced Grapes

Prepare the grapes as for preserving by removing the skins, boiling the pulp, and straining out the seeds. To seven pounds of fruit (weighed before the seeds are removed), add a cupful of strong vinegar, a cupful of grape juice taken from the grapes used for preserves, two ounces of cinnamon, one ounce of cloves (tie the spices in a cloth so that they can be removed), and three and one-half pounds of sugar. Boil until the mixture becomes thick like a marmalade, which will take about an hour and a half. When done, turn into glasses. This is good with roast meats.

Plum Sauce for Meats

To each pound of damson plums, add half a cup of sugar, one-half ounce each of cinnamon, mace, and cloves (tie spices in a bag). Remove the stones from the plums and boil until they are thick like jam.

PROBLEM

What will be the cost of one gallon of preserved pears put up in one-quart glass jars when pears are selling at $1.00 per bushel and sugar at the rate of sixteen pounds for $1.00, allowing 33⅓ per cent for waste and shrinkage in cooking? If stone jars sell for ten cents per gallon and one-quart glass jars at sixty cents per dozen, which is the more economical to use and how much? Which is the more practical?

Lesson IX

Canning Grapes

Materials used:

1 pt grapes	1 tb water	⅓ c sugar

Utensils needed:

1 pt can with cover and rubber	spoon	vegetable masher
	measuring cup	dishpan
saucepan	funnel	colander
sieve	bowl	

Operations:

1. Sterilize the utensils as usual.

2. Wash the grapes by putting them, while still on the stems, into the colander, setting the colander in the dishpan and pouring cold water over them. Where there is a sink with running water, it is convenient to put the fruit into the colander and let the water from the faucet run on them, but not too hard.

Fig. 20.— Washing Grapes in Colander

3. Stem the grapes and squeeze the pulp out of the skins, put the pulp into the saucepan and the skins into the bowl.

4. Cook the pulp about five minutes, then rub it through the sieve, using the vegetable masher; the sieve must be fine enough so that the seeds will not pass through.

5. Put the skins, pulp, and water into the saucepan and heat, slowly, to the boiling point.

6. Remove any scum that may form on the top of the cooking fruit.

7. Add the sugar and boil about ten or fifteen minutes.

8. Using the funnel, pour the fruit into the hot, sterile jar, taking the usual precautions; if necessary, fill it to overflowing with boiling water.

9. Seal.

Principles:

Grapes belong to the class of soft fruits, although they are not, because of their tough skins, so typical of the class as are berries. Because they are soft and juicy, if they are broken from the stems before being washed much of the juice and soluble nutrients is lost in the washing. For the same reason, all berries which have stems or hulls should be washed before being hulled or stemmed; they should be washed quickly and allowed to drain in a colander or sieve that they may not absorb much water or lose juice or soluble substances.

Because grapes and other small-seeded fruits contain a relatively large amount of seeds to pulp, it often does not pay to can them unless the seeds are removed. Grape seeds are disagreeable to many people and should never be swallowed. It is very much more pleasant to eat the seeded canned fruit than the unseeded. Even though it makes a little more work, it pays to seed the fruit at the time of canning.

The amount of sugar needed for canning grapes will vary perhaps more than for other fruits, depending on the tartness of the fruit. Many people prefer not to add much sugar to any fruit at the time of canning, and to sweeten to taste at the time of serving. Does this method require more or less sugar? Why?

Again, because sugar is a preserving agent, some fruits may, with its aid, be so canned that, even without being sterilized or even heated, they will keep. Currants, strawberries, and raspberries are the fruits best preserved by this method. They should be crushed well and thoroughly mixed with an equal amount of sugar. This sweetened mixture should be sealed in sterilized jars. Such canned fruit is especially good to serve with meats. Because it is uncooked, it has more of the flavor of fresh fruit.

Cleaning up:

1. Grapes are especially likely to leave stains upon dishes, towels, and holders. One cannot be too careful to keep all skins from the table and floor, where they may get crushed, for it is the soft, purple substance just inside the skin that makes the purple stain.

2. Rinse all dishes having grape juice on them in cold water before washing with the dishcloth in hot, soapy water.

4. Rinse the dishes in clear, hot water and return to their usual places in desk or store-room.

Additional Recipes

Preserved Berries

Make a thick sirup and let it cool a little. Put the berries into sterile jars and pour on the sirup, filling the jars full; adjust the rubbers and place the covers on loosely. Set the jars in the sterilizing kettle in water about as hot as the jars themselves; bring the water slowly to the boiling point and boil ten minutes. Cool in the water, tighten the covers, and set the jars in a cool, dark place. These preserves are not rich enough to keep if not sealed, but are richer than the ordinary canned fruit. The shape and color of the berries are well retained.

Raspberries

For twelve quarts of raspberries use two quarts of sugar. Put two quarts of the fruit into the preserving kettle and heat slowly; crush with the vegetable masher. Spread a square of cheesecloth over a bowl and turn the crushed berries and the juice into it. Press out the juice, return it to the preserving kettle, add the sugar, put the mixture over the fire, and stir it till the sugar is dissolved. When the sirup reaches the boiling point, add the other ten quarts of berries. Let them heat slowly and boil ten minutes from the time they begin to bubble. Skim well while boiling; seal in sterilized jars.

Currants and blackberries may be treated the same way.

Gooseberries

For six quarts of berries use one and one-half quarts of sugar and one pint of water. If green gooseberries are used, dissolve the sugar in the

water, then add the fruit, and cook fifteen minutes. Ripe gooseberries should be treated the same as the green fruit, but only half as much water need be added.

Canned or Bottled Fruit Juices

Juices of various fruits are often served as beverages or used for culinary purposes. These juices may be canned without the addition of sugar, but it is generally better to add a little. For grape juice, good bottles are preferable to fruit jars, though the latter may be used.

Grape Juice

Wash and stem the grapes; put the fruit in the preserving kettle and crush slightly. Heat slowly and boil gently for half an hour. Crush the fruit with a wooden spoon. Spread a piece of cheesecloth over a sieve set in a large bowl. Turn the juice and crushed fruit into the cloth and let it drain; then draw the edges of the cloth together and twist hard to press out all the juice possible. Return the strained juice to the cleaned preserving kettle, set it over the fire, let it boil up, then draw it back and skim it. Let it boil up again and skim, then add the sugar (1 gill of sugar to 1 qt of juice), and stir until it dissolves. Boil five minutes, skimming carefully. Fill hot sterilized jars or bottles with the juice. Put the jars or bottles in a moderate oven for ten minutes in a pan of boiling water. Have some boiling juice and pour a little of it into the jars as they are taken from the oven; seal and set them aside to cool.

Raspberry, Blackberry, Strawberry, and Currant Juices

The juices of all these except currants may be prepared in the same manner as grape juice is, except that half a pint of sugar should be added to each quart of juice. Currants require one pint of sugar to a quart of juice.

Cherry, Plum, and Peach Juices

These and similar fruit juices may be made by the process used for jelly, except that to each quart of juice only half a pint instead of a quart of sugar should be added.

JELLY MAKING

Lesson X

Crab Apple Jelly

Materials used:

2 c apple (after it is cut in pieces)	1 c water
	$1\frac{1}{2}$ c sugar

Utensils needed:

Sterilizing kettle	spoon	jelly bag
dishpan	knife	bowl
jelly glass and cover	pan	masher
saucepan	measuring cup	

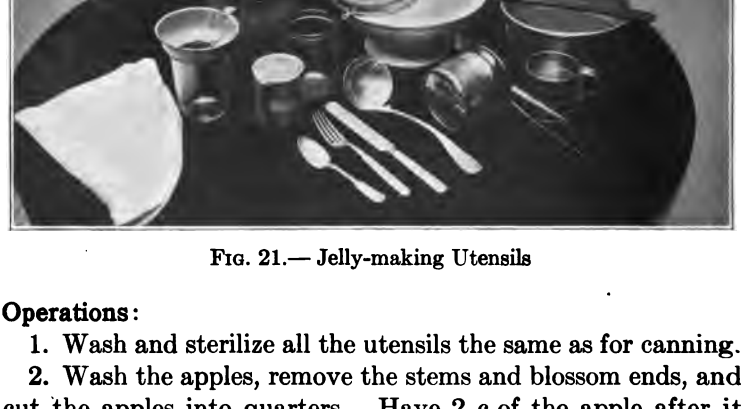

Fig. 21.— Jelly-making Utensils

Operations:

1. Wash and sterilize all the utensils the same as for canning.
2. Wash the apples, remove the stems and blossom ends, and cut the apples into quarters. Have 2 c of the apple after it is cut up.

3. Put the apple into the saucepan, add the water, and cook slowly till the apple pulp is soft.

4. Suspend the jelly bag over the bowl. In the home there are many different ways by which the bag may be suspended; each housewife must decide for herself which way best suits her convenience. A patent holder and squeezer which saves time and secures a maximum amount of juice is shown in Figure 22. In making a very small quantity of jelly, as in the school room, the bag may be held in the hand while draining. Wring the bag out of hot water. Put the point of the bag into the bowl, and roll the upper part back over the top of the bowl.

FIG. 22.—Jelly Bag and Holder

5. When the apples are soft, mash them with a well-soaked vegetable masher, and turn the mass into the suspended jelly bag.

6. When all the juice has been drained from the pulp, or it no longer drips, measure the juice, return it to the clean saucepan, and heat to the boiling point. Skim, then add to it three-fourths as much sugar as there is juice and boil, skimming if necessary. Boil, stirring almost constantly after the sugar is added, till a sample of the juice will harden, or "jelly" slightly, on a cold dish.

7. Remove the jelly glass from the sterilizing kettle and place it in a pan containing a little hot water or on a folded cloth which has been wrung out of hot water.

8. Pour the jelly into the glass and set it out of a draft to cool.

Principles:

What is jelly? Someone has said: "Ideal fruit jelly is a beautifully colored, transparent, palatable product obtained by so treating fruit juice that the resulting mass will quiver, not flow, when removed from its mold; a product with texture so tender that it cuts easily with a spoon, and yet so firm that the angles thus produced retain their shape; a clear product that is neither sirupy, gummy, sticky, nor tough; neither is it brittle, and yet it will break, doing this with a distinct, beautiful cleavage that leaves sparkling characteristic faces. This is that delicious, appetizing substance, a good fruit jelly."

What things are necessary for a good fruit jelly? First, fruit juice. And what is fruit juice? It consists largely of water in which are dissolved flavoring materials, sugar, vegetable acids, and a gelatinizing material that is of vegetable origin, that like starch contains carbon, hydrogen, and oxygen, and that makes the fruit juices "jell." This starchy substance is called pectin, the substance which is absolutely necessary for jelly-making. If pectin is present in any fruit juice or is added to that juice, it will, with the proper treatment, jell. Otherwise it will not. (See Appendix for test for pectin.)

By using the pectin test it has been discovered that different fruit juices contain different amounts of pectin, that the same juices contain different amounts at different times, and that raw fruit juices contain very little if any of it. This is well illustrated by the raw quince, which contains none, and the raw grape and apple, which contain very little pectin in their juices; the extracted juices of these same fruits, when cooked, contain large amounts of the substance. It has been shown that the cooked juices of any fruits or berries contain much larger amounts of this essential jelly-making substance, and that such juices make a much clearer jelly than the juices of raw fruits.

In canning, it is desirable to have the vegetables and fruits keep their original form, color, and flavor as nearly as possible. In cooking fruit for jelly, however, the great object is to get

out as much of the fruit juice as possible, and yet to keep as much as possible of the original flavor of the fruit.

There is one fact in the making of jelly which the economical housewife will do well to keep in mind, and that is that fruit juice, the canning of which requires little sugar, will keep as well as jelly. In the canning season, then, when the price of sugar is highest, the different fruit juices may be bottled with little or no sugar and in the winter when the price of sugar is lower, the jelly may be made, or it may be made from time to time as the needs of the household require.

When the apple is cut into small pieces, it requires less cooking to make it sufficiently soft that the juice can be extracted. Why does cutting the apple help? The less the fruit is cooked, the more the flavor will be retained in the juice. Why? If the apples are peeled and cored before being cooked, much juice is necessarily lost in the peelings and cores. Since the pulp is not used in the jelly, the presence of the skin, core, and seeds does no harm; in fact, the red skins often give a beautiful color to the jelly.

In making jelly in the home, where large quantities are made at one time and where much pulp is used, it is well to make more than one extraction.

When the pulp has drained fairly well for half an hour or so after the first cooking, instead of squeezing it in the usual way, return the pulp to the kettle, add more water, stir it till thoroughly mixed, cover it, bring it slowly to a boil, and drain it again. By the use of the pectin test one can easily determine whether pectin has been extracted. Some fruits will stand as many as five extractions, but usually three will be sufficient. The first extraction being the most normal, it is generally best to cook it down separately, but it will save time if the other extractions are mixed together.

The proportion of sugar to juice:

In making jelly from these various extractions, Extraction I is first to be considered. Assuming that this juice has been

obtained from a naturally good jelly-making fruit, that is, one rich in pectin and one that is also acid—for example, currants, sour apples, unripe grapes, and the like—the process of making jelly is then comparatively simple. Under such conditions, success or failure depends almost entirely on the proportion of sugar used; the correct proportion of sugar to the juice in hand means success, while an underproportion means a tough jelly, and an overproportion means more or less of a failure, depending on how great that overproportion is. Probably more good jelly-making material is spoiled through the use of an overproportion of sugar than from all other causes combined—and this because the would-be jelly-maker blindly follows the old rule of a measure of juice to a measure of sugar.

This exceedingly important point, then, the correct proportion of sugar to juice, needs to be very thoroughly understood. In studying it, let us first consider the result of making jelly from fruit juice alone, that is, without sugar. If a certain volume (say 1 c, 1 pt, or 1 qt) of good jelly-making fruit juice is boiled down until a jelly test is observed, we find on cooling the very small product that it is jelly-like, but it is not an ideal jelly. It is a tough, opaque, unpalatable mass, consisting of the pectin, more or less impure, which was contained in the original volume of juice.

Second, let us consider the results of boiling sugar in varying proportions with a volume of juice equal to that used above. If this volume of juice is boiled with, say one-fourth its volume of sugar until the jelly test is observed, we find, on cooling, a larger product than the preceding, one more like jelly, one less opaque, though still tough. Continuing this process and taking successive equal volumes of juice to that taken first, and boiling each successively with an increasing proportion of sugar (one-half volume, two-thirds, three-fourths, one, one and one-fourth, and so on), what are the final results? Examination of them shows that with increasing proportion of sugar each product increases in volume, and each is more tender, more transparent,

more palatable than each preceding kind, until one is reached that approximates a perfect jelly. Beyond this with increasing proportion of sugar the product continues to increase in volume, but in texture it becomes softer and softer until finally the pectin appears in lumps in the mass, or a mere sirup results.

What is the lesson of this succession of products? Simply this: The given volume of juice used for each jelly sample contains a certain quantity of pectin in solution, and this quantity of pectin is capable of utilizing profitably a definite proportion of sugar only. Up to this definite proportion of sugar the jelly produced from the given volume of juice is decreasingly tough and increasingly palatable, until finally a jelly of ideal texture and appearance is formed; but beyond that definite proportion of sugar, the jelly produced is increasingly soft until finally it fails to hold together at all—it fails to "jell." The error is self-evident: Too much sugar has been used for the pectin present in the juice taken. No amount of cooking after this will produce a jelly mass. Adding more sugar and cooking will make the gummy mass more sirupy. The remedy is to boil up the product with more juice—perhaps even with as much as was used in the first place; but the amount of juice added must depend, of course, on how great the over-proportion of sugar has been. Evidently this addition of juice is for the purpose of supplying sufficient pectin to take care of the surplus of sugar. Needless to say, this made-over jelly, though it may come out fairly well, will not equal in quality a corresponding jelly made originally with a proper proportion of sugar to juice.

For most of the juices of the fruits already indicated, that is, those that are rich in pectin and are fairly acidic, it is found that for Extraction I the correct proportion of sugar to juice by volume usually varies from ¾ : 1 to 1 : 1. (¾ : 1 means three-fourths of a volume of sugar to one volume of juice, while the expression 1 : 1 means one whole volume of sugar to one of juice.) Currants and partially ripened grapes yield a juice so

well adapted to jelly-making that they will usually demand a proportion of 1 : 1; while ¾ : 1 is likely to be the correct proportion for red raspberries and blackberries, and for juices from fruits to which much water must be added even to make the first juice extraction—such as sour apples, or crab apples, and cranberries. But in any case, the jelly-maker must be wary in proportioning sugar to juice. Doubtless much depends on the condition of the fruit itself; if the juice seems unusually watery, as currants just after a rain, and the alcohol test does not indicate pectin in plenty, then the proportion of sugar must be lessened. It is better to err on the side of too little rather than too much sugar if a jelly that "will stand alone" is desired;

FIG. 23.— Samples Showing Jellies with Varying Amounts of Sugar. (1) ¾ : 1. (5) 1 : 1. (6) 2 : 1.

if a softer and a sweeter jelly is called for then, of course, a larger proportion of sugar should be used.

Let us now turn our attention to a consideration of Extractions II to V, inclusive. Although it is well worth while to work up these extractions into jelly, great care must be exercised in doing so. From what has gone before, it is evident that, since much water has been used in their preparation and since each is correspondingly less acidic and less rich in pectin than the preceding extraction, these mixtures will utilize a much smaller proportion of sugar than will Extraction I. However, if these facts are kept in mind and the sugar carefully proportioned, a very excellent quality of jelly can be made from these dilute juices.

* Cut used by courtesy of the Department of Household Science, University of Illinois.

A good method for proportioning sugar to juice in dealing with these dilute extractions is to concentrate (boil down) their mixture rapidly until the resulting juice approximates the richness of Extraction I (which may be judged by the alcohol test, by appearance, and by taste), then to measure the resulting juice and add the proportion of sugar already used for Extraction I. If treated otherwise, the jelly-maker may be merely proportioning sugar to water, since, as already emphasized, these later extractions are largely made up of water.

The jelly from these extractions will be quite as clear and the texture quite as good as that already made from Extraction I. In other words, there is absolutely no need of the poor quality of jelly that some housekeepers have been accustomed to make from the juice "squeezed out" of a drained fruit pulp. If the fruit is properly handled, all the jelly therefrom will be of first quality. The practice of making "fruit butter" from the pulp remaining after Extraction I is good. In this case, of course there would be no further extractions.

The time required for making fruit juice "jell" depends upon the proportion of sugar to juice (the time decreasing as the proportion of sugar is increased), upon the proportion of pectin present (a thin juice demanding more time for cooking down), and, to some extent, upon the proportion of acid in the juice. The time should be made as short as possible, for in long cooking the acid of the juice so acts upon the pectin that it loses its jelly-making property. Long cooking of the juice also means the loss of a great deal of the fruit flavor. This is not desirable.

What is the effect of cooking sugar with an acid? Then what happens to the sugar when it is cooked in the fruit juice for jelly? Is it wise, then, to add the sugar to the fruit juice as soon as it is put over the fire to cook? Or is it best to add the sugar near the end of the process? Careful experiments have been made to show that neither of the two above methods is good and that the sugar should be added about half-way between these two extremes, and for the following reasons:

The extent to which the inversion of the sugar has taken place has an effect upon the texture of the jelly. If the sugar has been added at the end, so that little inversion has taken place, the uninverted, or common, sugar may form crystals in the jelly when it has stood; if the sugar has been added at the beginning of the process and much inversion has taken place, the invert sugar may crystallize. This, in both cases, is most likely to occur only when the sugar has not been rightly proportioned to the juice and the jelly has not been properly sealed. Too much sugar in jelly is almost certain to result in crystallization.

In making jelly in large quantities, as in the home, the sugar should be heated before being added. Place the measured sugar in a granite dish and put it in the oven. Leave the oven door open and stir the sugar occasionally so that it will get hot, but not brown or scorch. If the cold sugar be added to the boiling sirup, the whole process will be prolonged by the partial cooling. After the sugar is added, it is necessary in order to prevent burning, to stir the whole mass often or almost constantly.

Notice what happens when the fruit juice is boiled. The scum which forms is waste product and must be skimmed off. When the sugar is added and the mass is boiled, the impurities of the sugar also collect in the scum. So the more thoroughly the juice is clarified by skimming before the sugar is added, the less will be the loss of sugar during the process. Why?

A jelly bag is needed in every home, but it is not necessary to buy a patent one, for it is not a difficult thing to make. Some firm material, such as heavy cotton, wool, flannel, or felt, should be used. A piece of such material about three-fourths of a yard square should be folded with two opposite corners together in the form of a cornucopia. The two edges are sewed together, rounding them at the end. The seam should be carefully felled, for this kind of seam makes the bag much stronger and also makes it easier to clean. The top of the bag should be bound with tape or hemmed and should be provided with two or three loops by which it may be hung up.

Like all the other utensils, the jelly-bag must be sterilized, and should be wrung out of the hot water just as the crushed or mashed fruit is ready to put into it. A liquid of any kind always passes more readily through a wet cloth than through a dry one; as it is always desirable to get the juice out of the fruit pulp as soon as possible, it is best, for this reason also, to have the jelly bag wet when the fruit and juice are put into it.

Why must all utensils be sterilized? Why must the jelly glass be set in hot water or on a hot cloth when the hot jelly is poured into it?

Cleaning up:

1. What kind of water should be used for washing the jelly utensils? Why?

2. The jelly bag should be turned wrong side out and washed in clear cold water. Then it should be washed in warm, soapy water, boiled in hot water, rinsed, and hung up to dry.

3. If several extractions have been made from the pulp so that all the fruit juice has been extracted, the pulp may be thrown into the garbage can.

PROBLEM

What is the cost per glass (cup) of crab apple jelly, where crab apples are selling for 75 cents per bushel and sugar sixteen pounds for $1.00, if from one peck of crab apples one gallon of juice is secured and the proportion of sugar to juice is $\frac{3}{4} : 1$?

Lesson XI

Grape Jelly

Materials used:

2 c grapes
$\frac{3}{4}$ as much sugar as juice
paraffin

Utensils needed:

Same as in previous lesson
small basin
strainer

Fig. 24.— Paraffin

Operations:

1. Sterilize the utensils.
2. Wash the grapes as for canning.
3. Stem the grapes and put them into the saucepan with a very little water or into a double boiler with no water.
4. Cook slowly until soft; mash them and put them into the jelly bag.
5. Drain the grapes till the juice stops dripping; if the jelly bag is very firm, twist the top of it, forcing out as much juice as possible.
6. Measure the juice and put it back into a clean saucepan; boil, using a mat under the saucepan.
7. Skim the juice and add three-fourths as much sugar as juice.
8. Boil and skim again.
9. Boil till the liquid instead of running from the tip of the spoon when held up, "breaks off"; or until a drop of the mass "strings" between the tip of the thumb and first finger.
10. Remove jelly glass from the sterilizing kettle, stand it in a little hot water or on a hot cloth and pour the liquid into it; set it out of a draft to cool.

Sealing jelly made in previous lessons:

1. Cut a little paraffin, place it in a suitable dish, and melt it; heat the melted paraffin until very hot.
2. Pour the hot melted paraffin on the crab apple jelly, making a layer about one-fourth of an inch thick.
3. Cover the glass with a clean, hot, tin cover, label, and set the jelly in a cool, dark, dry place.

Principles:

When the grapes are cooked in the double boiler without the addition of water, the jelly-making process is shortened. Why? In making just the class rule, it is hardly worth while to make more than one extraction, but for home work more should be made. If all the juice is not extracted from the pulp, it is well to use the pulp in making fruit jam or butter. In case one is

planning to make jam, marmalade, or butter, it is just as well to make only one extraction of juice.

Why should an asbestos mat be used under the saucepan in which the fruit juice is boiled? Would it be more or less necessary after the sugar is added? Why? When should the sugar be added? Why at that time?

In making grape jelly it is best to use an acid grape. How can acid grapes be distinguished? Sweet, ripe grapes contain too much sugar, so it is better to use those only partially ripe or equal portions of green and nearly ripe ones. In fact, although pectin is absolutely essential for jelly making, only acidic fruit juices are really satisfactory for that purpose; in other words, juices ideal for jellies are rich in pectin and fairly acid.

Sometimes the deficiency in acid can be supplied by adding a little vegetable acid (tartaric or citric) to the juice. By this process it is possible to make jelly from any pectin-bearing fruit, but care must be taken not to destroy, by the use of an acid, the delicate flavor of the fruit. Although the texture of strawberry is improved by the addition of acid, its flavor is impaired; on the contrary, quince jelly is improved both in texture and flavor by the addition of an acid. If Extractions II, III, etc., are to be acidified, they must be boiled down before the acid is added or there will be an excess of the latter.

The jelly tests used in this lesson are preferable to that given in the previous lesson because they are quicker. There is always a moment when the fruit juice is *just right* to jell perfectly, and that is the moment when it should be removed from the fire; while a sample is cooling on a plate, there is time for much harm to come to the fruit juice in the kettle. In case jelly is not cooked quite enough, cover the jelly glass with a pane of glass if possible, and set it in the sun until it becomes firm.

It is possible to make jelly by what is known as the "cold process." For instance, currants may be heated, crushed, and the juice strained out; as much sugar as there is juice should

then be added and stirred till dissolved. This sweetened liquid may be turned into hot sterilized glasses, covered with glass and set in the window till it becomes firm. This jelly will be more delicate than that made by boiling, but it will not keep so well. Why not?

If jelly is boiled too hard after the sugar is added, it is very likely to crystallize; during the rapid boiling, particles of sirup are thrown on the upper part of the sides of the kettle where they form crystals. If these crystals are stirred into the sirup, they are apt to cause the whole mass to crystallize. Name two other causes of the crystallization of jelly.

Although jellies are so rich in sugar that they are not subject to the harmful action of yeast or bacteria, they furnish a good medium for the growth of molds. When the jelly cools, it contracts, leaving a space at the top of the glass. The hot paraffin will fill up this space, kill any mold spores that may have settled on the jelly, and seal it from further spores.

Why should jelly be kept in a cool, dark, dry place?

Cleaning up:

1. What precautions must be observed in the handling of grapes? Observe these as carefully here as in the canning of grapes.

2. Save any paraffin that is not used in sealing the apple jelly; it can be melted any number of times, and should always be saved, even after having been used for sealing jelly. After being used, it must be washed carefully and put away out of the dust.

3. If the grape pulp is to be used later, put it into a dish, and place it in a cool place; otherwise, put it into the garbage can.

PROBLEMS

1. How much sugar is required to make 8 glasses (cups) of unripe grape juice into jelly?

2. What will be the cost per glass of grape jelly if grapes are selling at 25¢ for an 8-pound basket, which makes 8 glasses of juice, and sugar 16 pounds for $1.00? Compare the cost with a standard grade of commercial jelly, the glasses alone being worth 15¢ per doz.

Lesson XII

Plum and Apple Jelly

Materials used:

1 c apple
1½ c plums
sugar (¾ as much as of juice)
1 tb brandy or alcohol
white of egg

Utensils needed:

Usual jelly-making utensils
white paper and scissors

Operations:

1. Sterilize the utensils.
2. Measure 1 c of the apples that were canned in the lesson on jelly-making; pour the juice from the canned fruit to fill the measure. Put the apple in the saucepan and cook till very soft.
3. Measure 1½ c plums previously canned or cook 1 c fresh plums in ½ c of water till soft.
4. After both the plums and the apples are cooked till soft, mash them and put them into the jelly bag to drain out the juice. In the home, it would be better to drain the juice from each fruit separately.
5. Measure the strained juice and return it to the clean saucepan.
6. Boil the juice and skim; add three-fourths as much sugar as there is juice, boil, and skim again if necessary.
7. Turn the pulp from the jelly bag into a suitable dish and set it in a cool place to be used later.
8. When the fruit juice gives the jelly test, turn it into the sterilized glass, using the usual precautions.
9. Set it aside to cool.

Sealing Grape Jelly Previously Made

1. Cut a disk of the thick white paper the size of the top of the glass.
2. Dip the disk of paper into alcohol or brandy and drop it on the jelly.

3. Cut another disk of paper about half an inch larger in diameter than the top of the glass.

4. Beat the egg white with 1 tb cold water, brush one side of the large paper disk with this egg mixture and put it over the top of the glass, pressing down the edges to make them stick to the glass.

5. Label and set in a cool, dark, dry place.

Principles:

Though plum juice may be made into jelly of good texture, it has a very strong flavor. Using apple juice with plum juice modifies the strong flavor and greatly improves it, besides supplying good jelly-making substances.

Apple juice may very profitably be used as a basis for other fruit juices deficient in pectin and acid, using enough of the other fruit to give the desired flavor.

If jelly is not skimmed carefully, the scum will appear as bunches or flakes in the hardened jelly, making it cloudy. If jelly boils too hard, the scum will be so mixed with the juice that it will not rise to the top and the jelly will be cloudy. If, in straining the juice, much pulp is left in it, the jelly will necessarily be somewhat cloudy. For this reason the juice should be allowed to drain or drip from the jelly-bag instead of being forced through, unless the time is so short that the process must be shortened. The making of more than one extraction does away with the necessity of very long draining or the squeezing of the fruit pulp to get all the juice.

FIG. 25.— Fitting Paper over Glass

As to the relative merits of cane and beet sugar for jelly-making purposes, experiments show that with jellies made from them there is no difference in color, flavor, or texture, but there is slightly more jelly when cane sugar is used.

How can jelly be sealed other than by using paper? The use of brandy or alcohol is considered better by some than the use of paraffin. The spirits kill all spores that may be on the jelly, while, if the paraffin is not very hot, some spores may escape death by its use. It is more work to use the paper disk for the covering of the top of the glass than to use a tin cover, but often a cover cannot be found to fit the glass and the paper seals it very effectively.

Cleaning up:

1. As plums stain very badly, especially if the fresh fruit is used, great care should be taken in handling them.
2. Observe the usual rules for cleaning up.

Lesson XIII

Lemon Jelly without Gelatin

Note: It will be well for the girls to start this lesson one day and finish it the next or the teacher herself may start it.

Materials used:

3 lemons
sugar ($\frac{3}{4}$ as much as of juice)

Utensils needed:

Sterilizing utensils
jelly-making utensils
meat grinder

Operations:

1. Grate or cut off the yellow outer part of the skin of the lemons.
2. Peel off the white inner part of the lemon skin.
3. Squeeze out the juice and set it aside.
4. Put the white lemon skin through the fine meat grinder.
5. Put the ground pulp of the lemon skin into the saucepan, cover it well with cold water, and let it soak several hours or over night.
6. Put the saucepan over the fire, adding more water if necessary (the pulp should be well covered with water); cook slowly for at least an hour.

7. Turn it into the jelly bag and drain it. In making large amounts, more than one extraction may be made.

8. When the water has all drained off, add to it enough of the lemon juice to give it a decided lemon flavor, being sure that the juice is well strained.

9. Measure the liquid, set it over the fire, and boil; skim; add to it three-fourths as much sugar as there is liquid; stir until the sugar is dissolved; boil and skim.

10. Continue to boil it slowly until the jelly test is given.

11. Pour into a sterilized glass and set it aside to cool.

Principles:

The thin, yellow outer skin of the lemon and orange contains the substance which gives a bitter flavor when heated. If this is carefully and entirely removed, there will be no bitter taste to the jellies made from the white part of the skin. Experiments have been made which prove that raw lemon and orange juices contain no pectin, but that this white inner skin is rich in it.

Name two reasons why lemon juice should be added to the extractions from the skin. What does the juice contain that the extractions lack? Is this substance necessary to jelly-making liquids? Orange juice, rhubarb juice, in fact, any acid fruit juice, may be added to these orange or lemon skin extractions to make a very excellent jelly. In such a case, what is the use of the skin extractions?

"For such purposes in general it is suggested that the white inner skins of oranges and lemons be saved from time to time, cut into fine pieces and dried, then later soaked up and used as desired. Hence what is usually a waste product, but what has been found to be an abundant source of pectin, may be used by the thrifty housewife in numberless ways to help out in jelly making. It may be worth while to note in this connection that the thicker skinned the oranges, the greater the yield of pectin that can be obtained from them."

Lesson XIV

Plum and Apple Marmalade

Materials used:

Pulp saved from making plum and apple jelly
1 c apple (after it is cut up)
sugar (proportion $\frac{3}{4} : 1$)

Utensils needed:

Sterilizing utensils	bowl	jelly glass and cover
saucepan	knife	vegetable masher
asbestos mat	spoon	pan
sieve or colander	measuring cup	

Operations:

1. Sterilize the utensils.

2. Pare, quarter, and core 1 c fresh apples; place them in the saucepan with a very little water and cook them till they are tender.

3. While the apple is cooking, put the plum and apple pulp left from the jelly lesson through the sieve or colander. If a sieve is used, use a wooden spoon to mash the pulp; if a colander is used, use the vegetable masher.

4. When they are cooked tender, put the apples through the sieve or colander in the same way.

5. Measure and return all the pulp which has been put through the sieve or colander to the clean saucepan.

6. Put the saucepan over the fire with the asbestos mat under it, and cook very slowly, stirring constantly till very thick.

7. Add gradually, stirring constantly, three-fourths as much sugar as there is pulp, and cook again till thick and of a glassy appearance.

8. Turn the mass into the sterilized jelly glass and set it aside to cool.

Principles:

Fruit butters, or marmalades, are made from the entire fruit or, as in this case, partly from freshly-cooked fruit and partly

from the pulp of fruit from which jelly has been made. Flora Rose says: "The object sought in making jams and marmalades is a rich, sweet product which will keep easily, which is not as crisp as jelly and yet which has something of the body of jelly, which is not as soft and tough as is the so-called preserve and yet has something of its softness and stickiness. In short, jams and marmalades should be skillfully produced combinations, or crosses, between jellies and preserves."

The fruit pulp in making marmalades is always put through a sieve or colander or a fruit press in order that it may be thoroughly mashed and that the seeds may be removed. Since the fruit is not kept in its original form, this is a good way to use partly spoiled or imperfect fruit. The good parts may be cooked and used here when otherwise they might be entirely wasted.

Name two effects of cooking fruit with sugar. Why, then, is it well to add the sugar near the end of the cooking instead of at the beginning? After the sugar is added, the constant stirring is even more necessary than before, because sugar burns easily. Often spices are added to fruit butters and marmalades, and they, too, should be added late in the process because they burn more easily than the fruit or the sugar. The spices add greatly to the palatability of the final product and somewhat to its keeping quality.

What is it that gives the glassy appearance to the fruit butter or marmalade? Fruit butters are cooked longer and so are stiffer than marmalades.

Marmalades are sealed the same as jellies. Give two good methods of sealing marmalades, jams, fruit butters or jellies.

Cleaning up:

1. Scour any discolored or burned spots from the utensils.
2. If there is more marmalade than the jelly glass will contain, put the extra amount in a small dish and set it in a cool place until it can be used.
3. Wash and replace all the utensils in the usual way.

Lesson XV

Grape Jam

Materials used:

$1\frac{1}{2}$c grapes sugar (proportion $\frac{3}{4}$: 1)

Utensils needed:

Bowl	asbestos mat	measuring cup
sieve or colander	spoon	jelly glass and cover
saucepan	vegetable masher	

Operations:

1. Sterilize the utensils.
2. Wash the grapes on the stem as previously directed.
3. Stem the grapes, separating the skins from the pulp.
4. Put the pulp into the saucepan and heat it till the seeds separate.
5. Put the pulp through a sieve or colander with meshes small enough to remove the seeds.
6. Measure and return the pulp to the saucepan; add the measured skins; add one-fourth as much sugar as there are pulp and skins; cook the whole slowly over an asbestos mat, stirring frequently.
7. Gradually add one-half as much sugar as there was pulp, cooking and stirring till a smooth mass results.
8. Turn into the sterilized jelly glass and set to cool.

Principles:

Jams are usually made of the smaller fruits and berries. When made of berries, the seeds are usually retained; however, a very seedy jam is not appetizing and it also may cause trouble in the digestive tract. The seeds of grapes are not objectionable to all people, but they are too large to be harmless if swallowed, and so should be removed from the food. It is not pleasing to have to remove them at the table.

Why should the sugar be added gradually and at the end of the process? If a tough, sticky jam is desired, the fruit and

sugar should be added in alternate layers, stirring frequently and cooking slowly until thick.

Why is jam solid when cold? How should jam be sealed? Will jam ferment if left unsealed? Give reasons for the last answer.

Cleaning up:

Observe the usual rules.

Supplementary Recipes

Orange Marmalade

Materials used:

12 thin-skinned oranges 3 lemons

Wash and slice the fruit as thin as paper or grind fine. For every quart of fruit add one and one-half quarts of water and let it stand over night. In the morning, cook slowly until tender (about 2 to 2½ hr.). Measure the cooked fruit and add an equal amount of sugar. Cook until the mixture jellies from a spoon (from 30 to 60 minutes).

Grapefruit Marmalade

"Wash the fruit thoroughly, remove the seeds and run the pulp through a chopper. Barely cover with water and let it stand over night. In the morning, boil 30 minutes and let it stand over night. On the third morning, boil 30 to 40 minutes or until the white part of the fruit is very tender. Measure the fruit, add an equal quantity of sugar, and boil until the mixture jellies from the spoon (about 30 to 60 minutes). Pour into hot sterilized glasses or small jars and cover with paraffin.

The reason for such extended preparation previous to cooking the fruit with sugar is to soften the white of the fruit and extract from it the jelly-making substance."

Carrot Marmalade

Wash, scrape, or peel the carrots; slice them thin and cook them in a very little water till they are tender and thoroughly done. Drain and save the water drained off. (This water contains a large amount of fruit sugar.) Put the pulp through a sieve and measure it. Cook it with an equal amount of sugar, adding to it the water drained off. When it has reached the proper consistency, add sliced lemon, whole or cut up, just long enough before taking from the stove to give the lemon flavor. Put into jelly glasses.

Quince Honey

"Pare and grate five large quinces. To one pint of boiling water add five pounds of sugar. Stir over the fire till the sugar is dissolved, add the quince and cook 15 or 20 minutes. Turn into glasses. When cold, it should be about the color and consistency of honey."

PICKLING

Lesson XVI

Peach Pickles

Materials used:

- 3 peaches
- 1½ c vinegar
- 1½ c sugar
- 3 tp whole cloves
- a 6-inch stick of cinnamon

Utensils needed:

- Spice bag or small piece of cloth and string
- bowl
- knife
- sterilizing utensils
- wire basket or strainer
- pint can and cover
- spoon

Operations:

1. Sterilize utensils.
2. Put the cloves and cinnamon into the spice bag or tie them in a small piece of cloth.
3. Put the sugar and vinegar into the saucepan, and add the spice to it; stir till the sugar is dissolved, and boil ten or fifteen minutes.
4. While the sirup is boiling, plunge the peaches into hot water, using the wire basket, or put them in the strainer over the bowl and pour boiling water over them; remove the skins.
5. Put the peaches into the boiling sirup and cook until they are soft.
6. Turn into the sterilized can and seal.

Principles:

When fruit or vegetables are "pickled," they are preserved in a salt or an acid liquid. Name two other preservative agents that have been used thus far in the work. Sugar, salt, and

vinegar belong to the non-poisonous class of preservatives. Salt and vinegar do not act as preservatives because they destroy or prevent the growth of micro-organisms, but because they prevent the action of putrefactive and decomposing organisms. What is it that gives milk a sour taste? Is milk harmful when sour? Under favorable conditions milk may sour in a very short time, but when milk is sour, the acid in it may protect it for days against the action of putrefactive micro-organisms. Likewise sauerkraut, which is the acid product of cabbage, is protected against decay by its acid content.

Spices, as well as sugar and vinegar, are used in this lesson. Recent investigations at the Wisconsin Agricultural College have indicated that pepper and ginger have only a slight preservative power, if any, but that cinnamon and cloves are very effective preservatives. They are digestive stimulants, or condiments, and when used to excess or in large amounts in the diet, they are unfavorable to digestion. Should food preserved with spices be used to supply the needs of the body? Name five foods in which spices are used wholly or partly as preservatives.

There are many varieties of vinegar that may be used in making pickles, but cider and white vinegar are the kinds usually used. Cider vinegar forms a scum, but is generally preferred in spite of this. Horseradish leaves are often used to prevent the scum from forming.

PROBLEM

Find the approximate cost of pickling four gallons of peaches when peaches can be purchased at $1.75 per bushel, vinegar at 20¢ per gallon, and sugar at 6½¢ per pound, not taking into account the cost of spices, fuel, and labor.

Lesson XVII

Appetite and Eating (Reading)

Have condiments a place?

Many dietists believe and preach that condiments have no proper place in the diet. One of them wrote: "To a sound man sauces are needless; to one who is diseased they nourish not him, but his distemper; and presently the intemperance of his taste betrays him into the hands of Death."

Morbid appetites:

Modern science has disproved the ancient maxim that whatever pleases the palate nourishes. That a morbid and unhealthy appetite may be induced by the excessive use of condiments is obvious to any one who has used them; therefore the wise housewife will use them sparingly and be careful that those she does serve are as harmless as a condiment may be. To some stomachs, any sort of pickle, catsup, or spice sauce, even a salad dressing, works harm, while others seem to receive little or no harm from them. To all, however, there must be some irritation of the alimentary tract from the use of any combination of spices and vinegar with acid vegetables or fruits.

The condiment habit:

And yet the housewife who fails to "put up" pickles, both cucumber and mixed, and who does not supply her larder with such pleasant relishes as spiced apples, piccalilli, chowchow and chili sauce, feels that she is ill prepared to provide her table during the winter with well-balanced and palatable meals. We, as a people, have acquired the condiment habit and must have the flavor of our meats brought out by a piquant sauce.

Condiments disguise flavors:

"I will not compromise my meats by serving condiments with them," said a hostess who was her own cook and waitress, adding, "It is only at cheap boarding-houses that the flavor of

meats requires to be modified by the use of condiments or highly seasoned sauces."

However, there may have been those at the lady's own table who preferred the spice of a good condiment or at least a piquant sauce to the plain flavor of the meats. Certainly the use of these tasteful adjuncts to a dinner is not confined to cheap boarding-houses. They are found on the tables of the wealthy and are served by the most expensive chefs.

Intemperate use of condiments:

However, condiments have little or no food value and often lead to stomach troubles by over-stimulating a jaded appetite. While their moderate use can do little harm in a strong and healthy family, their excessive use is always to be deplored—a form of intemperance that is apt to be as subtle as it is pernicious in its influence. Everyone is said to possess the stomach he deserves and there can be little doubt that more bad digestions are made than are inherited.

Epicures prefer fine flavors:

Epicures like Sydney Smith are not over-fond of condiments. They like a savory dish, but prefer having the spices and other ingredients of the ordinary condiments introduced in subtle ways into the dish itself. If the seasoning is not cooked in a dish, they declare the dish might as well go unseasoned, and if the various ingredients are not brought together in the proper order, they are apt to detect the error, however slight, and condemn the dish. In the same dish, the person lacking the true epicurean taste may be unable to discern any imperfection.

Cultivation of taste:

It is wrong to suppose that an epicurean appetite is either morbid or in any way unhealthy. It is, in fact, the reverse of unhealthy. It is merely a highly cultivated appetite, able to perceive flavors of the most subtle kind and as keen in its appreciation of what is really good as it is quick to discern an unsavory flavor. Epicures need no tabasco sauce to help them enjoy a delicately roasted loin, but they know quite well when and

how a horseradish sauce should be served and when a bit of chili sauce will add to the flavor of beef or mutton, and when it may detract from it.

Dickens' well-fed characters:

Charles Dickens, the great English novelist, must have been fond of good eating, for his characters eat with great frequency and always some dish that seems uncommonly good. Admirers of Dickens' novels are apt to declare that they always get hungry when reading his descriptions of delicious cold lunches or delectable beefsteak puddings, such as Tom Pinch's sister made for his friend, John.

The tremendous array of good things brought to Dick Swiveler and the little Marchioness by the adorable Boffins is almost sure to induce an appetite for each and all of them. A young man who read Dickens a great deal when he was about twenty years of age and was consequently gifted with an excellent natural appetite says that he used to have to go down to the pantry late in the evening if he happened to come across a Dickens dinner. Psychologists would need no more convincing argument in favor of the influence of the imagination upon the appetite.

Lesson XVIII

Small Cucumber Sweet Pickles

Note: This lesson must be started the day before the class work. It would be interesting to have only a part of the girls use the cabbage leaves and compare results.

Materials used:

1 pt small cucumbers	whole mustard seed	½ c sugar
⅛ c salt	whole cloves	water
vinegar	cinnamon	cabbage leaves

Utensils needed:

Sterilizing utensils	spice bag	dishpan
measuring cup	bowl	pint can and cover
saucepan	spoon	

Operation:

1. Sterilize the utensils.
2. Wash the cucumbers in clean cold water. (Do not use a vegetable brush as this rubs off the little points and makes the cucumbers shrivel when soaked.)
3. Place the cucumbers in the bowl, add the salt, and cover them with boiling water; let them stand over night.
4. In the morning, remove them from the brine, place them in the saucepan (which is lined with cabbage leaves), cover with the vinegar, and add the sugar.
5. Tie the spice in the spice bag and put it into the saucepan.
6. Let the brine come to the boiling-point, but do not boil.
7. Seal in the sterilized can.

Principles:

Brine is the salt solution used in pickling foods, such as cucumbers, green tomatoes, meats, etc. The strength of the brine, which means the relative proportions of salt and water, depends upon the length of time the food is to be left in the solution; if too strong a brine is used for vegetables, they will soften and spoil. Soaking the vegetables in the brine makes them firmer by withdrawing moisture from the vegetable tissue, gives them a milder flavor and the desired salt taste, and adds to their keeping quality.

In pickling cucumbers or green tomatoes, it is desirable to have them retain their natural color as nearly as possible. Sulphate of copper (blue vitriol), which is a poison, was formerly used to give the desired color, but its use is now prohibited in this country and no goods containing copper sulphate may be imported.

Sometimes these vegetables are scalded in a brass or copper dish to get the green tint. Food so colored may not cause illness, but it can not be considered harmless. Lining the kettle in which cucumbers and green tomatoes are scalded with grape or cabbage leaves is said to aid in retaining the natural green color. Alum, even when only a very small quantity is used, aids in keeping pickles crisp, but is unwholesome.

PROBLEMS

1. What will one gallon of small cucumber pickles cost when cucumbers can be purchased at $1.25 a bushel and vinegar at 20¢ a gallon, eliminating all other costs?

2. Enumerate the items of cost in the home canning of fruits and vegetables.

3. What are the comparative advantages over commercial canning?

Lesson XIX

Tomato Catsup

Materials used:

1 c sliced or chopped ripe tomato pulp	red pepper (if desired)
scant ½ c vinegar	¼ tp salt
scant ⅛ tp pepper	scant 2 tb sugar
4 cloves	4 allspice
	small piece of cinnamon

Utensils needed:

Sterilizing utensils	2 bowls
saucepan	sieve
wooden spoon	measuring cup
spoons for measuring	1 pt jar

Operations:

1. Sterilize the utensils.

2. Wash the tomatoes and cut them into small pieces.

3. Cook the tomatoes in the saucepan, without adding water, till they are mushy.

4. Put the tomatoes through the sieve.

5. Measure the pulp; return it to the saucepan, and add, for every cup of pulp, ½ c vinegar, scant 2 tb sugar, ¼ tp salt, scant ⅛ tp pepper, 4 allspice, 4 cloves, and a small piece of cinnamon. If desired, red pepper may also be added.

6. Place the saucepan over the fire and cook the pulp till it becomes thick, but can still be poured.

7. Put the pulp through the sieve again to remove the spice.

8. Pour the pulp back into the saucepan and heat it to the boiling point.

9. Pour the boiling catsup into the sterilized jar and seal.

Principles:

If catsup is made carelessly, it is likely to ferment in the bottles, but when the vessels are carefully sterilized, the fruit washed and then heated as directed, there is no good reason for its spoiling. Benzoate of soda is sometimes used in small quantities to prevent fermentation from taking place. In such small quantities, this preservative may not be harmful to human beings, but it enables manufacturers to use for catsup the refuse of canneries and other ingredients that are not fit for human food. Inasmuch as the best of catsups can be made without the use of such questionable preservatives, it is better to avoid their use entirely.

STUDIES IN FRYING

Lesson XX

FATS AND OILS (Reading)

Fat in the diet:

Much of the heat and energy is supplied to our bodies through the fats that we eat. Fat is fuel and is therefore more suitable for a winter than for a summer food. The Eskimo and his dinner of whale blubber and the Arctic explorer with his almost incessant hunger for fatty foods are familiar enough through hearsay. But fats and oils are needed by the system even in summer and are often craved by Southern peoples as well as by those living in colder climes. The little negroes living in our southern states are fond of dipping their bread into cottonseed oil, and they eat this with as much relish as we do our bread and butter. In India, which is one of the hottest inhabited places of the globe, the people like to pour melted butter over their rice as they eat it. This may be the result of there being little or no meat in the regular diet of the negro and the East Indian; but it also goes to show that fat must be a necessary part of our diet during all seasons of the year, though it is true that we need less of it during the summer than we do during the winter months.

Functions of fat:

Since man must have fat the year round, this food must perform some valuable function besides that of yielding heat and energy. And so it does. If more is eaten than can be utilized in the body at once, the surplus will be stored in the form of body fat. It is necessary for each of us to have a supply of surplus fat stored in the body to withstand the ravages of disease, for, when the body is preyed upon by a wasting illness, like typhoid fever, the patient, not being permitted to eat, may be sustained

by the store of fat in the body. If there is no such store of food upon which the body can rely, it must fall back upon the muscular tissues of the body, which is always an extravagant and wasteful process and often a dangerous one. Fat is also useful in guarding against certain very serious diseases, particularly tubercular diseases. Some fat in the food of thin, delicate, nervous persons helps to keep them in a more healthy condition.

How fats and oils differ:

Fats differ from oils in the kind and amount of the compounds composing them. They are not the simple substances they appear to be, but a mixture of various fats. Chief of these are three fats, known respectively as stearin, palmitin, and olein. Palmitin and stearin are very much alike in that they are both hard and crystalline and have a high melting point, that is, a very high temperature is required to melt them. They are present in nearly all fats and oils. Fats like beef and mutton tallow contain a great deal of stearin, and a higher temperature is required to melt them than is required to melt lard. Olein is a liquid. It is contained in nearly all fats, but those which have a low melting point contain a larger proportion of olein than of the other two compounds. From this it will naturally be assumed that olein is present in large proportion in lard and that it is the chief ingredient in the natural oils. Olive oil is a compound of olein and palmitin. Cottonseed oil contains the two fats in greater proportion than other ingredients.

Essential oils:

Fats and oils also contain other important compounds. These are the oils known as essential oils. The oils and fats mentioned in the foregoing paragraphs are called fixed oils to distinguish them from the essential oils. There are several points of difference between the two. It is essential oils that give the characteristic flavors to the various fats and oils and to some fruits as well. The percentage of essential oils is always low in anything of which they form a part, with the single exception of butter, which contains essential oils to the amount

of 20 per cent of the whole. In butter, the essential oils are present in the form of an acid, called butyric acid.

Character of essential oils:

The essential oils are readily volatilized, whereas the fixed oils are practically non-volatile unless heated to an extraordinarily high degree of temperature. The essential oils, unlike the fixed oils, have no direct use in the body or in the work of nutrition, but indirectly they exert an influence much like that of the extractives of meat. Great care should be taken in cooking not to lose more than is necessary of these oils, because of the pleasant flavor they impart to food.

Meat fats:

Edible fats and oils are procured both from the animal and the vegetable kingdom. From beef and mutton, suet and tallow are obtained; from pork, lard is secured; from the codfish comes the codliver oil, which has certain medicinal properties, for which reason it is given to those who are delicate in health and require more fat in their diet.

Vegetable fats:

The vegetable fats are usually in the form of oils. Of these the most important is olive oil. Next in importance comes cottonseed oil. In this country, the two are used in the same or similar ways, one being frequently substituted for the other. A high grade of cottonseed oil is just as nutritious as olive oil and just as easily digested, besides being much lower in price. It may be distinguished from olive oil by its bright yellow color, which is quite in contrast with the green color of the olive oil.

In France, peanuts are pressed to extract their oil, and the resulting oil is used in the same way as olive oil. It, like cottonseed oil, has the advantage of being lower in price than olive oil, and by its use nothing is lost in nutritive value or digestibility. Peanut oil is also being used more and more in this country as a salad oil. Corn oil, from Indian corn, is now being made in this country. It is a bright yellow oil and may be used in the same manner as olive oil.

In Russia, sunflowers are grown for their seeds. When these are ripe, they are gathered and pressed, each bushel of seed yielding a gallon of oil. By pressing, oil may also be obtained from rapeseed, sesame, hazel nuts, the castor bean, and other fruits and seeds. The oil obtained from the castor bean cannot be called an edible oil, it being used largely for medicinal purposes. The plant bearing this bean is a native of China, where they have long known the value of the oil and the method of extracting it. The plant is now cultivated in many parts of the world, a considerable number of them being raised for their seeds on the farms of the central Mississippi valley.

Lesson XXI

Codfish Balls

Materials used:

Class Rule	Home Rule
¼ c sliced potatoes	2 c sliced potatoes
2 tb shredded codfish	1 c shredded codfish
1 tb egg	1 egg
¼ tp butter	½ tb butter
fat for frying	fat for frying
bread for testing	bread for testing

Utensils needed:

Deep kettle
2 bowls
wooden spoon
paring knife
frying basket
Dover egg beater
granite pan
strainer

Fig. 26.

Operations:

1. Pare and slice the potatoes and rinse them in cold water.
2. Shred the fish by pulling it into little bits. Discard all bones and the skin. Wash the pieces of fish in cold water.
3. Put the fat in the deep kettle and set it over the fire to heat.
4. Place the fish and potatoes in the granite pan and cover them with boiling water.
5. Let them boil until the potatoes are tender, then strain. Drain thoroughly so that they will be as dry as possible.
6. Beat the egg slightly.
7. Place the fish and potatoes in a bowl and mash them with a spoon or potato masher.
8. Add the butter and mix, beating with a fork.
9. Add the egg gradually and beat the mixture thoroughly.
10. Place the frying basket in the kettle.
11. Watch the fat to see when it smokes, if lard is used.
12. When it seems to be hot enough, drop in an inch cube of bread. If it browns in 40 seconds, the fat is hot enough for frying.
13. Drop the fishball mixture by the spoonful carefully into the hot fat. It is dangerous to allow the fat to spatter as it may catch fire and thus cause the fat in the kettle to become ignited.
14. Drop in only three or four spoonfuls at a time; too many will cool the fat too much.
15. When the balls are a delicate golden brown on all sides, remove them by lifting up the basket and setting it on a plate or tin beside the kettle, after which the balls can be removed to a piece of soft paper placed in the warming-oven.
16. Return the basket to the kettle, test the fat again, and proceed until all are done.
17. If a frying basket is not to be had, support the food in the fat upon a flat, wire egg beater or upon a long-handled fork.
18. Then remove the kettle to the back of the range or if gas is used, turn it out so the fat may be cooled slightly before it is removed from the kettle.

Serving:

Garnish the platter of codfish balls with bits of parsley. Codfish balls may be used either as a breakfast, luncheon, or supper dish. They are especially good served with creamed potatoes, but they may also be served with white sauce and baked potatoes.

FIG. 27.— Plate of Codfish Balls

Principles:

Frying is cooking in smoking hot fat, deep enough to cover the food. What is sautéing? Mention some foods that are cooked by sautéing. How does sautéing differ from frying?

Of the two methods of cooking, frying is preferable for several reasons. It is more economical, for less fat is absorbed by the cooking article, when the frying is properly done, than when the food is sautéed. The intense heat of the fat immediately forms a coating around the frying article by coagulating the albumin on the exterior. This coating of coagulated albumin prevents the escape of the natural juices of the food and also retains all the flavors which are made more pronounced by the cooking. The fat is likewise excluded from the interior of the article by the same means. When food is properly fried, it is more wholesome and more easily digested than is sautéed food. In sautéing, a great amount of the juices and much of the flavor are lost.

In order to obtain the proper results, it is very necessary to have the fat at the right temperature before any article is put into it to be cooked. To determine this, it is always best to use the bread test. In judging by appearances, one is likely to be deceived unless one is an expert and accustomed to the particular fat being used. If the fat is not of the right temperature, the article to be cooked will absorb a great deal of it, this resulting in a very unwholesome and usually unpalatable food. Cooked articles, such as codfish balls and croquettes,

should have the fat hot enough to brown the bread in forty seconds. Uncooked articles must have the fat at a somewhat lower temperature in order that they may have time to cook thoroughly before they are browned.

When food is put into the fat to fry, it is much cooler than the fat and there is also some moisture on its surface. All this cools the fat very rapidly, necessitating the reheating of the fat before another set is put into it to cook. For the same reason, too many articles should not be put in at one time, for then the fat becomes so cooled as to cook the food improperly. Articles that are cooking should not be allowed to touch each other; if they do, they are then not surrounded by the fat, and an uneven cooking results. The great sputtering of the fat when the codfish balls are dropped in is due to the moisture on their surface. This is immediately changed to steam, which seeks to escape, thus causing the bursting of the bubbles of fat on its surface.

In making codfish balls, it is best never to shape them. A great deal of air should be beaten into them. When they are shaped, a great many of the tiny air bubbles are broken by the pressure and the balls are then not so light and good. It is an interesting experiment to shape one or two, cook these, and notice the difference between them and those that are dropped from the spoon.

Fried articles should always be drained on soft paper in order that all the fat on the outside may be removed. Doing this will make the food more wholesome and palatable.

Cleaning up:

1. Arrange a double piece of cheesecloth over a wire sieve. Fix this over a clean bowl. Strain the fat through the cloth and sieve into the bowl. Burn the cloth or throw it into the garbage can. Never strain hot fat through the sieve, as the fat may melt it. The lard should be strained to remove any possible pieces of bread crumbs or other material that may burn when the fat is next heated, thus discoloring the fat.

2. Take a piece of absorbent paper or a soft cloth and wipe out the kettle. Put it in its proper place. Destroy the cloth or paper.

3. Cover the fat and set it in a cool place until needed again.

4. Place the parings, fish bones, and other refuse in the garbage can.

5. Clean all utensils according to instructions previously given.

PROBLEM

Determine the cost of serving codfish balls to a family of six, using local market prices and disregarding cost of fuel and fat for frying.

Lesson XXII

Rice Croquettes

Materials used:

Class Rule	Home Rule
¼ c rice	2 c steamed rice
2 tb egg	1 well beaten egg or 2 yolks
¼ tb butter	1½ tb butter
speck of salt and pepper	½ tp salt
	⅛ tp pepper
fat for frying	fat for frying
cube of bread	a few grains of paprika } These may be omitted.
egg and crumbs for crumbing	2 tb chopped parsley } These may be omitted.
	egg and crumbs for crumbing

Utensils needed:

Frying basket	two bowls
egg beater	wooden spoon for mixing
utensils for measuring	spatula or other broad-bladed knife
plates for the eggs and crumbs when crumbing	soft paper on which to drain croquettes
sifter	
kettle for the fat	

Operations:

1. Put the fat in the kettle and place it on the fire to heat.
2. Beat the egg slightly.
3. Cut the parsley very fine.
4. Mix all the ingredients very thoroughly.
5. Shape the mixture into round balls.

FIG. 28.— Shape the Mixture into Round Balls

6. Roll each ball in sifted bread crumbs, taking care that every part is well covered with crumbs.

FIG. 29.— Roll the Ball in Bread Crumbs

7. Break the egg on another plate, add 2 tb water, and beat until the yolk, white of the egg, and water are well blended, using a wire egg beater.

FIG. 30.— Roll the Ball in the Egg

8. Roll each ball in the egg, using the spatula or knife, and taking care that each part is well covered with the egg. Drop onto the plate of crumbs.

9. Roll each ball again in the crumbs, covering well.

FIG. 31.— Making Croquettes Cone-shaped

10. Place the balls on a clean plate and shake off some of the outer crumbs so that the coating may not be too thick.

11. Take a ball in the hand and carefully mold it into the shape of a cone, making it slightly cup-shaped on the end.

12. Place the wire basket in the fat and test as in the preceding lesson, for these croquettes are also made of a cooked mixture.

13. When the fat is hot enough, lift the basket, and place three croquettes in it. Carefully lower it into the fat and fry until they are a golden brown. Then lift them out by means of the frying basket and at once place them bottom side up in the warming-oven on a piece of soft paper that they may drain.

14. Test the fat again; if hot enough, place in it more of the croquettes and continue.

Serving:

When ready to serve the croquettes, place a small portion of brightly colored jelly, such as currant, grape, or plum, in the hollow of each croquette, place them on a hot platter and garnish with parsley. Serve with Tomato Sauce. (See Book Two, Lesson XLV.) Rice croquettes are very good served with cheese sauce. (See Lesson XXVIII, Additional Recipes.) These croquettes may be used in place of a vegetable for dinner, or they may be the principal dish at luncheon.

FIG. 32.— Rice Croquettes

Principles:

In this lesson a food is prepared which consists almost entirely of rice, which has a low protein content and which falls apart very readily when shaped into croquettes. In order to keep the kernels of rice together better, the egg is mixed with

them. The egg also helps to cook the food properly by forming a coating over the croquettes when they come in contact with the hot fat. But experience has shown that in this instance the one egg is not enough to make the protective coating, therefore another one must be put on by the egging and crumbing process.

The croquettes as first rolled are quite moist and this moisture prevents the egg from clinging to the croquette. To dry the surface of the croquettes, therefore, they are first rolled in the dry crumbs, which have been sifted to get them very fine. In case a very thin coating is desired, the croquettes may first be rolled in flour and then in the egg. The last coating should always be of crumbs, as these give the finest appearance to the croquettes when done. The last coating is put on to help fix the egg on the croquette, to remove as much as possible of the surface moisture in order that there may be less sputtering of the fat when the croquettes are lowered into it, and to give the croquettes an attractive appearance.

If the fat be of the right temperature, that is, if it browns a piece of bread in 40 seconds, a coating of albumin impervious to the surrounding fat will be formed the moment a croquette is dropped into the fat, and the finished product ought to be a toothsome and delectable dish.

Fat when heated so that a thin blue smoke rises from it or when it browns a piece of bread in 40 seconds is very hot, much hotter than boiling water in fact, for it then has a temperature of from 350° to 400° F., and water boils at a temperature of 212° F. When a kettle of fat is put on to heat for frying purposes, it sometimes begins to sputter and "boil." An amateur is then likely to think that the fat is actually boiling and that it is hot enough for frying. But testing it with a cube of bread quickly reveals the fact that the fat is not hot enough for frying. The "boiling" of the fat is caused by the presence of water, for fat may contain as much as thirty per cent of water. The boiling point of water is 212° F., as has been said, and when the contents of the kettle reach this temperature, the water held in the fat is

changed to steam, which of course seeks to escape, and in doing so causes the bursting of the bubbles on the surface of the fat. The fat will not become hotter than 212° F. so long as any water is present; when the water has all boiled away, the surface of the fat in the kettle will become quiet and the temperature of the fat will rapidly rise until the right degree is reached, when frying may begin.

Cleaning up:

1. Care for the fat as directed in the previous lesson.
2. Clean the utensils and put them away in their proper places.

Lesson XXIII

Cottonseed Oil (Reading)

Utility of cottonseed:

For two centuries of cotton raising in America all the cottonseed was thrown away and only the fiber was used. At the beginning of the Civil War, only four mills for the extraction of oil from the cotton seed were in operation in the South. As late as 1867, the records show that no new ones had been established. In the next thirty years scientists busied themselves so effectually with the problem of using the cotton seed that some three hundred cottonseed mills were erected in the South. As the demand for the product grew, mills were established to supply the demand.

Cottonseed oil gets a bad name:

Then it was that the oil of the cottonseed passed through an experience similar to that which oleomargarine passed through when it made the mistake of parading as butter. Cottonseed oil was placed on the market under the name of olive oil. It mattered little that it was almost if not quite as good and as palatable as olive oil. It was not olive oil, but was obtainable by cheap means, whereas olive oil was expensive and hard to

procure in large quantities. Therefore, there happened to cottonseed oil what must happen to everything that parades under false colors, pretending to be other than what it really is. All its good qualities were forgotten and only the fact that it was an olive oil adulterant was remembered. Before the deception was discovered, a great many men gained large profits by bottling cottonseed oil and selling it as pure olive oil at olive oil prices.

Used in oleomargarine:

While all this was being done, a new demand for the oil had sprung up and was steadily increasing. This was the increasing demand for oleomargarine, the butter substitute in the congested districts of western Europe. Cottonseed oil of the highest grade is one of the important ingredients of oleomargarine.

Lard substitutes:

But the men of science did not yet think that they had completed their self-imposed task. They were sure that the oil could be put to still other uses. Just about the same time that the discovery of its fraudulent existence as olive oil was making the cottonseed oil the cheaper product it ought to be, the scientists discovered that it could be mixed with beef suet to make a product to all external appearances very much like lard, and which could be used just as lard is used. So "compound" lard came upon the market. Later, other lard substitutes, such as cottolene and cottosuet, were made. These are composed mainly of cottonseed oil of the finest quality and beef suet. These lard substitutes are made at the packing centers, the packers annually using for this purpose about thirty per cent of all the oil manufactured in the South.

Used for sardines:

Of late years the oil has found still another use where formerly olive oil alone was used. This is in the packing or canning of sardines and similar fish. Here, too, it answers the purpose as well as does olive oil.

Non-edible uses:

But the oil has other uses than edible ones. Oil of an inferior quality is used in making a special soap which is used in wool scouring. The cylinders of phonographs are made from the residue of the cotton seed after the high grade oil has been pressed out. Combined with other greases, the residue also makes excellent laundry soap. It is also used extensively in the South as a fattening food for cattle. Some of the lower grade oils are bleached white by means of sulphuric acid, mixed with petroleum, and used in miners' lamps. Candles, glycerine, and other products are also made from the oil.

Enormous output:

In the United States over 40,000,000 gallons of cottonseed oil are produced annually. Of this amount, about one-half is used at home; the remainder is exported, France and Holland taking 80 to 90 per cent of the exported article. Holland is our best market for the highest grade oil, which she uses in making oleomargarine, in the manufacture of which she leads all other countries. France is our best customer for the lower grade oils, which she uses chiefly in soap-making, though some of them are refined and used for edible purposes.

How the oil is obtained:

Since the uses of cottonseed oil are so numerous and so important, it is interesting to know how it is obtained. Since it became known how valuable the seeds are for their oil, great care has been exercised in ginning them. Wet seeds produce an oil of inferior quality, hence the seeds must not be allowed to become damp. If perchance this should happen, they must be dried. This is accomplished in one of three ways: They may be spread on a floor in such a way that the air has free access to them; they may be laid on frames in the open sunlight; or they may be kiln-dried.

Process of crushing:

When the seeds are thoroughly dry, they are prepared for crushing. Three processes are here required. The first frees

the seeds from dust and other extraneous matter; the second removes the lint which is left on them by the ginning machine. This lint consists of very fine, short fibers which are used in the manufacture of cotton batting. In the last process the cleaned seeds are passed through a sheller in which there are several knives revolving at great speed, which knives remove the hard outer husks of the seeds. When the seeds come from the sheller, they are a mixture of kernels and bits of shell. The shells are removed by strong currents of air to which the mixture is subjected in a winnowing machine.

The seeds are now ready to be crushed. This process begins on the top floor of the mill, the kernels being brought thither by elevators. The rollers of the crushing machines grind the kernels into meal as fine as flour. This meal is carried by machinery to large kettles, in which it is cooked by steam from twenty to thirty minutes. The cooking drives off any moisture which may be present in the meal and also liquefies the oil. When the cooking has continued the proper length of time, the meal is passed into a machine called a "former."

Separated into oil and oil cakes:

This machine, as its name indicates, shapes the meal into cakes of a suitable size, and wraps each in a piece of hair cloth. From the former, the cakes are taken and placed by hand in the presser, in which they are arranged in boxes placed one above the other. When these are filled, the whole is subjected to a pressure of from 3,000 to 4,000 pounds to the square inch. The oil runs from the presser into large receiving vats, or tanks. The cakes, after being pressed sufficiently, are removed, stripped of the cloth, dried, and then broken into small pieces and ground into meal, which is used as food for stock.

Purification of oil:

The oil thus obtained must be purified and it must also be separated into higher and lower grades. The pieces of the hulls and other waste matter which are held in suspension are allowed to settle in the tanks, after which the clear oil is drawn

off. Then 10 to 15 per cent caustic soda is added to the oil and the whole stirred briskly for forty-five minutes at a temperature from 100° to 110° F. Then the mixture is left undisturbed for a period of time ranging from six to thirty-six hours. By the end of this time a sediment consisting of the soda combined with the waste matter will have settled to the bottom. This sediment is used in soap-making.

Grades of oil:

The clear oil is drawn off. It must undergo still other purifying processes. Two methods are employed in doing this. One method is to heat the oil gradually and then allow it to settle. By the other method it is filtered. The product thus obtained is a clear, yellowish oil known in trade as "Summer Yellow." This oil, chilled slightly, will have crystals formed in it. These crystals comprise the palmitin of the oil. They are separated from the oil in much the same manner as lard stearin and palmitin are separated from it. The cottonseed oil from which the palmitin has been extracted is known as "Winter Yellow;" it is largely used in the manufacture of butter substitutes and compound lard. This is also the oil which is used as a salad or as a frying oil in place of olive oil.

Lesson XXIV

Apple Fritters

Materials used:

Class Rule	Home Rule
½ apple	2 medium-sized sour apples
6 tb flour	1½ c flour
½ tp baking powder	2 tp baking powder
1/16 tp salt	¼ tp salt
2⅔ tb milk	⅔ c milk
1 tb egg	1 egg
¾ tb sugar	3 tb sugar

some powdered sugar; fat for frying

Utensils needed:

Basket and kettle for frying
egg beater
bowl in which to beat the egg
sieve for sifting flour
paring knife
bowl for mixing
wooden spoon
soft paper on which to drain fritters

Operations:

1. Place the fat on to heat.
2. Mix and sift the dry ingredients.
3. Add the milk slowly, stirring all the time.
4. Beat the egg well and add it to the mixture by the folding process.
5. Pare the apple. Cut it into eighths.
6. Remove the core, cut the eighths into slices. If the slices are quite long, cut them into halves crosswise.
7. Place the frying basket in the kettle of fat.
8. After placing the frying basket in it, test the fat as in previous lessons, allowing one minute for the bread to brown.
9. Drop the batter by spoonfuls into the hot fat; let it fry until it is a deep golden brown.
10. When done, remove the fritters and drain them on paper.

Serving:

Fold a napkin and place it on a platter or suitable plate. Sprinkle the fritters with powdered sugar and arrange them on the napkin. These may be served as they are or with maple sirup or with a hot fruit sauce, such as raspberry or lemon sauce. Fritters, like rice croquettes, may be served as the vegetable at dinner or as the principal dish at luncheon. At a formal dinner they are served as an entrée.

FIG. 33.— Plate of Fritters

An entrée is a dish served at dinner or luncheon between the regular courses. Entrées may be hot or cold, depending on the character of the dish. Meat, fish, eggs, vegetables, or fruits may serve as the foundation of an entrée. Uncooked meat or fish may be used, but more often entrées are made of left-overs. They give the housewife an excellent opportunity to show her skill in using left-overs. In a formal dinner of twelve courses, the sixth course is usually an entrée, coming as a rule right after the meat course. An entrée is served from the side. For this reason it is usually made in individual portions before being cooked; if not so made, it should be separated into portions before being passed.

Principles:

In this lesson an uncooked food was fried; for this reason the fat had to be somewhat cooler than it was in the previous lessons or the fritters would not have cooked thoroughly.

It is not necessary every time a food is fried to take a new supply of fat in which to fry it. With care the same fat may be used over and over again. New fat should be used for batter and dough mixtures, potatoes, and fish balls; croquettes of different kinds and meat or fish may follow them. But, to keep the fat in good condition, it must be frequently clarified, that is, it must be made clear. Fat should never be allowed to become overheated. This ruins the fat for frying purposes, for after it has once been overheated, it will never again brown properly and therefore should not be used for frying. It may, however, be used in making soap.

When fat is to be clarified, set it over a slow fire where it will melt slowly. Pare a potato, wash it, and cut it into one-fourth inch slices. Dry these and add them to the melting fat. When the fat has ceased to bubble, fix a double cheesecloth over a fine wire sieve and strain the fat. The potatoes, being porous, will gather to themselves all the fine sediment, and will absorb any odors or gases that may be present in the fat. All large pieces of sediment will be caught in the straining.

If there is only a small amount of fat to clarify, it may be done in the following manner: To cold fat add some boiling water and stir briskly. Set the whole where it will cool. The fat will rise to the surface and harden, making a cake, just as it does in the soup stock. The sediment will adhere to the bottom of the cake, from which it can be scraped with a knife.

In the preceding lessons directions have often been given for saving bits of fat for trying out. Fat from beef, pork, chicken, and other poultry may be tried out and used for frying. Fat from mutton and smoked meats should never be used because of their strong flavor. Mutton fat is fit only for soap-making; bacon and ham fat are fine for sautéing purposes. To try out fat, cut it into small pieces and melt in a double boiler. It may be melted directly over a slow fire, but there is then more danger of its burning. After it is all melted, strain it through a double cheesecloth into a clean jar.

Cleaning up:

1. Care for the fat as has been directed in previous lessons.
2. Wash all utensils carefully and put them away.

PROBLEM

From your home experience, can you state two other methods that may be used in cooking apple fritters?

Lesson XXV

French Fried Potatoes

Materials used:

Class Rule	Home Rule
1 small potato	Desired quantity of rather small potatoes
	fat for frying
	salt

Utensils needed:

Kettle and basket for frying
paring knife
clean towel in which to dry the potatoes
soft paper on which to drain the potatoes

Operations:

1. Place the fat on to heat.
2. Wash and pare the potatoes.
3. Cut them into eighths lengthwise.
4. Dry them thoroughly on the towel.
5. Test the fat. What is the proper test for this frying?
6. Place the frying basket in the hot fat.
7. Add a few potatoes and cook until they are golden brown in color.
8. Lift the basket, let them drain a minute over the kettle, then remove the potatoes to the soft paper, which should be laid in the warming-oven or other warm place.
9. Return the basket to the kettle. Sprinkle the fried potatoes with a little salt.
10. Test the fat again. Continue until all the potatoes are fried.
11. Serve as quickly as possible after they are cooked, for they soon lose their crispness.

Serving:

These potatoes are served at dinner just as are mashed potatoes. They are also often used as a garnish for roasts and other meats.

FIG. 34.— French Fried Potatoes

Principles:

Sometimes potatoes are soaked an hour or more in ice water before they are cooked. What food principle is then lost in the water? The loss of the starch tends to make the potatoes more crisp; but when they are not soaked in the ice

water, they contain more nutrients and are more mealy. The fat for frying the potatoes should have a temperature so hot that it will brown the cube of bread in 60 seconds. The fat must not be so hot for the potatoes as it was for the croquettes, for the potatoes must be cooked as well as browned.

The best fat to use for frying purposes is olive oil. This oil can be heated to a temperature of 600° F. without burning, though in ordinary use it is not necessary to heat it so high. If olive oil is considered too high-priced to use for frying purposes, the cheaper peanut or cottonseed oils may be substituted for it with equally good results. Cocoanut oil is another vegetable oil used to some extent for frying purposes. These oils may also be heated very high without burning; for this reason they may be used over and over again without fear of discoloration. There is another reason why vegetable oils are the best for frying purposes and that is the hygienic reason. Long experience in countries where they have been used extensively has shown them to be equally as digestible as lard and other animal fats, and perhaps more so.

If animal fat is to be used, the best is a mixture of one-third beef suet to two-thirds lard. Pure lard alone should never be used unless one is very sure that it is of the best quality. Poor lard is unwholesome and it has an unpleasant odor and flavor which are further developed by heating. Clarified drippings make the best frying fat of animal origin.

Cottolene and cottosuet are two preparations found on the market which are very cheap and very acceptable for frying. As their names indicate, they are mixtures of cottonseed oil and beef suet. Since nothing but the finest grades of beef tallow and cottonseed oil are used in their preparation, there need be no hesitation in using them for frying purposes.

Cleaning up:

1. Strain the fat as has been previously directed.
2. Care for utensils in the proper way.

Lesson XXVI

Olive Oil (Reading)

The oldest edible oil:

Olive oil is the most expensive and the most delicate of the edible oils. It was also one of the first oils to be used as food for man. In the Bible it is stated that the dove which Noah sent out from the ark, when the floods were receding, came back with an olive branch in its mouth. The fruit of the olive tree has been used by the people living on the shores of the Mediterranean Sea since the very earliest times.

The olive in mythology:

The ancient Greeks have left a story which shows in how great esteem the olive was held. In this story it is related that Neptune, the god of the sea, and Minerva, the goddess of wisdom, both wanted the honor of protecting the city of Athens. The other gods and goddesses were at last called upon to decide between the two claimants. It was finally determined that the one who could bring forth the most useful gift to man should have the honor. Neptune brought forth the horse and Minerva the olive tree, whereupon the gods and goddesses decided in favor of Minerva, who then became the protectress of Athens. Be this as it may, the fact remains that the fruit of the olive tree has been of much use to man since the earliest times.

Home of the olive tree:

The original home of the olive tree was southern Europe and Asia Minor. It is now grown in all the countries surrounding the Mediterranean Sea and in India, Arabia, and southern California. Italy produces the largest quantities of this fruit.

The olive is a plum:

The olive tree is a species of plum, but the leaves are darker than those of the ordinary plum and its branches and trunk are twisted and gnarled into all kinds of shapes.

Propagating olive trees:

There are several different ways of propagating olive trees. The most common are from seed, cuttings, sprouts, and suckers. The little trees are set out in orchards at a distance of thirty or forty feet from each other. They begin to bear when about three years old, but it is not until they are seven years old that their crop is large enough to be profitable. They continue bearing for many years; there are trees in California which were planted by the Spaniards before the Revolutionary War, and in southern Europe there are trees which are known to be several hundred years old.

Harvesting the olive:

The time during which the fruit is being harvested is an exceedingly busy season on the olive farm. The picking begins when the most of the fruit is nearly ripe. Men and women, boys and girls, all find something to do. Some hold out large sheets of canvas under the trees to catch the falling fruit, while others climb into the trees and shake the limbs. Those olives which can not be removed from the tree in this way are later picked by hand.

Grading of the product:

Of course when olives are gathered in this way, many fall from the trees before they are ripe, hence the olives must be sorted. The ripest olives are almost black; those medium ripe are brown; and a large number of them are still green, although they have grown to their full size. The fruit must be graded as to ripeness and also as to size.

It is the ripe olive which yields the highest grade oil; the oil from green olives has a bitter flavor, hence it cannot be used for culinary purposes. The green olives, therefore, are sorted according to size. They are then soaked in a weak solution of lye, which removes their bitter taste. After this is done, they are packed either in salt or in brine, which preserves them as well as gives them flavor. Sometimes, too, cinnamon, cloves, and coriander seeds are added to give an additional spicy and aromatic flavor.

Crushing the olive:

In order to extract the oil, the fruit must first be crushed. In some mills care is taken to crush only the pulp; in other mills the whole fruit is crushed. The stone, or pit, of the olive does yield an oil, but this is thought to be of a somewhat bitter flavor and darker color, hence it is never mixed with the best grades of oil. After the first oil has been pressed out from the pulp, the stone also is crushed and its oil removed by subsequent pressings.

After the fruit is crushed, it is packed by hand in flat baskets, each of which holds about a half-bushel, and set one above the other in a press which presses the oil out very gradually. The oil which comes first is termed "virgin oil." It is almost a clear white and is used for salads. Sometimes the oil obtained by the second pressing is mixed with it and the whole is sold as virgin oil. The oil obtained by the last pressings can be used only for lubricating and lighting purposes.

Our olive oil supply:

Most of the olive oil used in this country, nearly a million gallons a year, comes from France and Italy. There were in 1910, 836,347 olive trees in California, capable of producing 350,000 gallons of oil annually, besides large quantities of the fruit. But labor conditions here are such that it costs about sixty cents more to produce a gallon of olive oil in California than it does to import a gallon from Europe, even after the large import duty has been paid. So for this reason, California, instead of producing our entire supply, as she could do, produces but a very small part of the oil consumed here. In the year 1900, 649,423 gallons were imported from Italy and 275,461 gallons from France.

Adulteration:

Olive oil, because of its high price, is more exposed to adulteration than any other of the edible oils. As has been stated in a previous lesson, cottonseed oil is the chief adulterant of olive oil. Other oils thus used are peanut oil, corn, or maize,

oil, and, in rare instances, poppy-seed oil. That olive oil is frequently adulterated is shown by the following record of an analysis made by the Bureau of Chemistry of the United States Department of Agriculture. They obtained eighty-three different samples of olive oil, of which eleven were California oils, thirty-six were French oils and thirty-four were Italian oils. Of the California oils, two were found to be adulterated; of the French oils, six, and of the Italian oils eight.

Fortunately the United States government is now trying hard to do away with all adulterations and with false and misleading labels on goods; but eternal vigilance will be necessary on the part of the people and the government lest in a moment of relaxation, adulteration substitutes and false labeling again are introduced.

Lesson XXVII

Plain Doughnuts

Materials used:

Class Rule	Home Rule
2 tb sugar	1 c sugar
1 tp butter	2½ tb butter
1½ tp beaten egg	3 eggs
2 tp milk	1 c milk
7 tp flour+enough to roll	3⅓ c flour+enough to roll
¼ tp baking powder	2 tp baking powder
a few grains of cinnamon	¼ tp cinnamon
a few grains of nutmeg	½ tp nutmeg
⅛ tp salt	1½ tp salt

Utensils needed:

Mixing bowl and spoon
Dover egg beater
sieve
doughnut cutter
small granite pan filled with hot water
draining paper fitted into a dripping pan
measuring utensils
bowl for beating eggs
bread board and rolling pin
deep kettle
two-tined fork

FIG. 35

FIG. 36

Operations:

1. Cream the butter.
2. Add one-half the sugar and mix.
3. Beat the eggs until they are light.
4. Add the milk and the remaining sugar to the eggs. Mix.
5. Add the milk and eggs to the butter and sugar.
6. Sift the flour; measure out the desired amount; add the baking powder to this, also the spices and salt, and sift.
7. Add the flour gradually to the mixture, stirring all the time.
8. If this does not make the mixture stiff enough to roll, add more gradually until it can be rolled. Remember that too much flour in doughnuts as well as in cookies makes them hard and tough.
9. Flour the board and place one-half the mixture upon it.
10. Knead and pat it gently to the thickness of one-fourth inch.
11. Dip the doughnut cutter in the flour and cut out, proceeding just as in making rolled cookies.
12. Place two or three gently in the hot fat or in a wire basket, then in the fat, taking care that it does not sputter. How hot should the fat be?
13. When they are brown on one side, turn with a two-tined fork. Never turn doughnuts more than once.

14. Have the pan of hot water standing by the kettle on the stove.

15. When the doughnuts are done, pick one up on the fork, but do not pierce it with the fork, quickly immerse it in the pan of hot water, and drain it on the paper.

FIG. 37.— Frying Doughnuts in Basket

16. Reheat the fat and be sure to test it before again using.

17. Pick up the trimmings and mix them with the remaining half of the mixture. Proceed as before.

Serving:

Doughnuts are used with coffee for breakfast. Sometimes they are passed with coffee for dessert at the family dinner. They also make a substantial and acceptable food for picnics. Just before serving doughnuts, roll them in powdered sugar.

Principles:

In doughnuts we have another food which must be cooked as well as browned in the deep fat. For this reason, the fat must not be so hot as it was for the croquettes and codfish balls.

It should take a minute to brown the bread in it. If the fat is too hot, the doughnuts will sear over too quickly, thus preventing them from rising sufficiently.

FIG. 38

The doughnuts are dipped into the hot water to remove some of the fat which clings to them. If this pan is set away where the fat on the water will cool, the fat will harden into a cake which can then be removed and placed with the remainder of the fat. Of course if an oil in place of a fat was used in the frying, this can not be removed, for one of the differences between an oil and a fat is that fat hardens when cooled, but oil does not. But even if an oil is used, the superfluous oil may be removed as directed.

What method was used in combining the doughnut mixture? What made the doughnuts puff up and become light? Name the different leavening agents that have been used. The doughnuts were made light partly because of expansion of air, partly because of expansion of steam, but principally because of the generation of carbonic acid gas.

The leavening agent used in these doughnuts was baking powder. Baking powder consists of bicarbonate of soda, which is more commonly known as baking soda, and cream of tartar and cornstarch. The bicarbonate of soda is the substance that contains the elements out of which carbon dioxide is produced. It is an alkaline substance, while the cream of tartar is an acid substance. What action takes place with red litmus paper when held close to either of these substances? The cornstarch is added to the mixture to keep it dry, for cornstarch very readily absorbs moisture. This mixture must not be allowed to become moist, for then some of the carbon dioxide will be

set free, thus weakening the leavening power of the baking powder. When a substance containing cream of tartar and soda is moistened and heated, there is a rapid escape of the gas. When an acid and an alkaline substance are used together in this way, in the right proportions, they neutralize each other, that is, the substance left after the gas has escaped will be neither acid nor alkaline, and will give no reaction with either blue or red litmus paper.

In doughnuts made with sour milk and bicarbonate of soda, the acid is supplied by the sour milk and the result is the same, the liberation of carbonic acid gas when heat and moisture are applied. The gas will not be liberated from the soda unless an acid is present.

In a batter mixture, the gas is held in little bubbles by the gluten of the flour, which is very tough. This gives the porous appearance to all cooked batter mixtures. It is the gluten of the flour which also causes the walls of the gas bubbles to become firm, thus allowing the mixture to keep its shape after it has cooled.

When several eggs are used, less baking powder is needed. Why should this be so?

Cleaning up:

1. How should the fat be cared for and why?
2. What should be done with the floured board? Why?
3. What is the proper method of caring for dishes in which batters have been mixed? Why?
4. Why should the cogs of the Dover egg beater never be put into the dish water?

PROBLEMS

1. If three dozen doughnuts can be made from the amount of materials used in the given recipe, what will be the average cost per dozen doughnuts, disregarding the amount of spices and fat for frying, when the local produce markets are quoting the following prices: Sugar, 16 lb. for $1.00; flour, 85¢ for a sack of 24½ lb.; eggs, 24¢ a doz.; butter, 36¢ a lb.; milk, 6¢ a qt.?

2. Compare this with the price of doughnuts in your local bakeries. With the usual price paid for home-made doughnuts, 15¢ a doz.

Lesson XXVIII

Swedish Timbales* and Rosettes

Materials used:

Class Rule	Home Rule
¼ c flour	¾ c flour
⅛ tp salt	½ tp salt
⅓ tp sugar	1 tp sugar
2½ tb milk	½ c milk
⅓ egg	1 egg
1 tp olive oil	1 tb olive oil

fat for frying

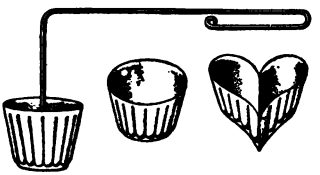

Fig. 39.— Timbale Irons

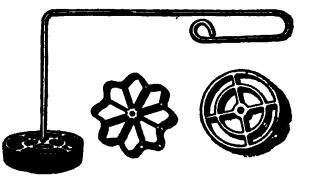

Fig. 40.— Rosette Irons

Utensils needed:

Timbale or rosette irons
bowl
bowl and egg beater
kettle for frying
wooden spoon
cup

Operations:

1. Place the fat on to heat.
2. Mix and sift the dry ingredients.
3. Add the milk gradually. Beat the eggs just enough to mix the yolk and white.
4. Add the beaten egg, then the olive oil.
5. When the fat is nearly hot enough for cooking uncooked mixtures, place the timbale or rosette irons in it to become heated. These must be heated just to the right degree of temperature before they can be used. Two or three minutes is usually enough.

*For another kind of timbale, see Lesson LV.

6. Test the fat as for French fried potatoes.

7. Place some of the timbale mixture in the cup.

8. Take the iron from the fat, let the fat drain from it into the kettle, then dip it into the batter in the cup to within an inch of the top.

9. Quickly put the iron back into the fat, but be careful not to put it in too far, for then the mixture will rise up over the timbale iron. If the iron is not hot enough, the batter will not cling to it. If the fat on the iron sizzles when the iron is put into the batter and the case spreads out and drips from the iron, the iron is too hot.

FIG. 41.—Making Rosettes

10. Hold the iron in the fat until the case is a delicate, yellowish brown.

10. Hold the iron in the fat until the case is a delicate, yellowish brown.

11. Remove the iron from the fat, shake off the case, and place it upside down on soft paper to drain. If the cases seem to lack in crispness and are thick and soft, more milk should be added to the batter. When the batter is right, the cases are delicate and crisp.

NOTE: Notice that timbales and rosettes are cooked on the *outside* of the iron, that is, the iron is dipped into the mixture, which adheres to its outer surface. Patties are only another name for timbales.

Serving:

These timbale cases filled with creamed oysters, chicken, sweetbreads, or other meats are used as an entrée at a formal dinner. Filled with a creamed vegetable of some kind they are used with the meat course at dinner. Filled with fruit, such as strawberries or raspberries, they are used as dessert. Such a dish may also be served as the first course at a ladies' luncheon.

The rosettes, sprinkled with powdered sugar, may be used as dessert at dinner or luncheon. Or they may be spread with a jam or some kind of preserves and ornamented with whipped cream and served as dessert, one to each individual. In place of the jam or preserves, fresh fruit, such as strawberries or peaches may be used.

FIG. 42.—Timbale Cases

Principles:

It was mentioned in one of the preceding lessons on frying that properly fried food is more likely to be easily and completely digested than is sautéed food. To understand why this is so, one must first understand something about the digestion of fat in the body.

There are three main divisions of the digestive tract: The mouth, the stomach, and the intestines, the latter being divided into two divisions, the small and the large.

FIG. 43.— Rosette Cases

In the mouth, the food should always be ground into fine pieces by the teeth. This process is called mastication. In the mouth also is begun the digestion of starchy foods, for the saliva acts on the starch of potatoes, bread, and other starchy foods, so that it is changed to dextrin. This, then, gives a good reason why we should thoroughly masticate our food.

In the stomach is found the gastric juice. This juice acts upon the protein foods. Mention some foods, therefore, that are prepared in the stomach, for use in the body. What substance is secreted by the lining of the stomach that acts on milk? The gastric juice seems to have no effect either upon starchy or fatty foods, these remaining practically unchanged in the stomach.

FIG. 44.— Filled Rosette

In the small intestines, the food comes in contact with three digestive juices, the intestinal and pancreatic juices and the bile. These juices acting together complete the digestion of starch begun in the mouth, the digestion of proteins left undone by the stomach, and in addition prepare sugars and fats for the body's use.

The fats are not changed nearly so much as are the protein and carbohydrate foods. In fact, they are changed only from large globules of fat to tiny ones, so tiny that they can be taken up by the blood and carried to all parts of the body, where they are used to yield heat and energy.

Thus it is easy to see that when fat is mixed with our other food, it reaches the small intestines in small masses, which renders its digestion more easy. If it were swallowed in large masses, its digestion would naturally take a longer time. Man learned instinctively that it was better to spread the butter upon the bread than to eat it by itself, as we do our other foods.

When a food is sautéed, a great deal of fat is usually absorbed by the food. Thus, if the food is a starchy food, each little starch granule will be surrounded by a layer of fat. Now the saliva of the mouth should attack these little starch granules

and begin the work of digestion; but when they are all surrounded by a layer of fat, the saliva can not do its work upon them, for it has no effect upon fat, hence cannot break through it to reach the starch. For this reason, toast should never be soaked with butter; it is better to butter it after it has been served at the table.

If the food is a proteid and each little particle of protein is surrounded by fat, the gastric juice cannot act upon it, because this juice has no effect upon the surrounding fat and it cannot reach the protein. The only place where fat is acted upon is the small intestine. Here the fat must first be removed from the particles of protein and starchy food before they can be digested.

Hence it is easy to see that when foods are soaked with fats, their digestion must be retarded and perhaps only imperfectly done. The digestion of starch should be begun in the mouth and of protein should be about completed in the stomach. In the intestines, the food is pushed quite rapidly forward, and it may not infrequently happen that by the time all the fat which surrounds the food particles is removed, the food is too far along in the large intestines to be further digested. In this way, a great amount of food may be wasted.

Fried food is always perfectly digested and wholesome when the fat is of the right temperature to form a crust or covering over the cooking article, thus barring its own entrance into the food as well as shutting in the juices and flavors.

There is another reason why sautéed food is unwholesome or likely to be so. Fat which has been superheated has undergone chemical changes. In sautéing, there is only a thin film of fat placed in the frying pan and this is usually allowed to become very hot, and because there is so very little of it, it usually becomes too hot. A part of the fat volatilizes, that is, it evaporates, or escapes into the air. This is usually occurring when a column of smoke rises from the fat. The part remaining in the pan rapidly turns brown and acquires a sharp, bitter, or

acrid taste. Food that is placed in this acrid fat to cook rapidly takes on more or less of this fat, thus rendering it both unpalatable and unwholesome. Butter volatizes very rapidly, hence should never be used for sautéing or frying. When any food is to be sautéed, the fat must never be allowed to get smoking hot.

Cleaning up:

Remove all traces of the work, just as has been previously directed.

Additional Recipes

POTATO CROQUETTES

Class Rule	Home Rule
¼ c riced potatoes	2 c riced potatoes
a few grains of celery salt	¼ tp celery salt
⅛ tp chopped parsley	8 drops of onion juice
½ tp butter	1 tp chopped parsley
⅛ egg yolk	2 tb butter
a little pepper and salt	1 egg yolk
	¼ tp salt
	⅛ tp pepper

Mix the ingredients in the order given. Shape, dip in crumbs, egg, then crumbs again. Fry in hot fat.

THICK WHITE SAUCE FOR CROQUETTES

2 tb butter		⅛ tp pepper
4 tb flour	May be	a few drops of onion juice
1 tp salt	omitted	a few grains of cayenne
		1 c milk

Combine as directed for White Sauce (Book One, Lesson VII). This amount will make enough for about two cups of fish or meat. For turkey or chicken croquettes, use one teaspoon lemon juice and substitute celery salt for a part of the salt.

VEAL CROQUETTES

Class Rule

¼ c chopped veal	⅛ egg yolk
⅛ tp salt	a dash of cayenne
2 tb thick white sauce (level)	

Home Rule

2 c chopped cooked veal
½ tp salt
a few grains of cayenne
1 c thick white sauce
⅛ tp pepper
a few drops of onion juice
1 egg yolk

Mix the ingredients in the order given. Cool, shape, dip in crumbs, egg, and then crumbs again. Fry in deep fat.

Breaded Veal Cutlets

Have the desired amount of veal sliced from the leg in one-half inch slices. Boil, following directions for boiling meat very carefully. Let boil until tender. Then remove from the water and drain. Crumb, egg, and crumb again, then fry in deep hot fat until they are browned. Use the stock for soup.

Sour Milk Doughnuts

4 c flour+enough to knead
½ tp soda
½ tp cinnamon
1 tp baking powder
½ tp salt
1 well-beaten egg
1 c sugar
½ c sweet milk
¾ c sour milk
1 tb melted butter

Mix and sift the flour, baking powder, and seasonings. Beat the egg, add the sugar to it, then the milk and melted butter. Add the dry ingredients and mix with a knife. Pat, roll, and shape as directed in class recipe.

Corn Fritters

1 can corn
1 c flour
1 tp baking powder
2 tp salt
1 tp paprika
2 eggs

Chop the corn and add the dry ingredients mixed and sifted, then add the yolks of eggs beaten until thick and fold in the whites beaten until stiff. Drop by the spoonful into deep hot fat; drain on soft paper and serve on a folded napkin.

Banana Fritters

3 bananas
1 c bread flour
2 tp baking powder
1 tb powdered sugar
¼ tp salt
¼ c milk
1 egg
1 tb lemon juice

Mix and sift the dry ingredients. Beat the egg until it is light, add the milk and combine the mixtures; then add the lemon juice and bananas forced through a sieve. Drop by spoonfuls, fry in deep fat, and drain. Serve with lemon sauce.

Lemon Sauce

½ c sugar
1 c boiling water
1 tb cornstarch
2 tb butter
½ tb lemon juice
a few gratings of nutmeg
a few grains of salt

Mix the sugar and cornstarch, add the water gradually, stirring constantly, boil five minutes, remove from the fire, add the butter, lemon juice, and nutmeg.

Fruit Fritters

Fresh peaches, apricots, or pears may be cut in pieces, dipped in batter and fried as are other fritters. Canned fruits may also be used, but these must be drained from their sirup. The sirup may be made into a sauce to serve with them. Small fruits, as raspberries, also make a good fritter.

Saratoga Chips

Wash and pare potatoes. Slice thin, using a vegetable slicer. Let them soak in ice water two hours, taking care that the water is always ice cold. Drain, boil one minute in boiling water, and drain again. Cover with cold water. When chilled, take the slices from the water and dry them between towels. Place a few in the frying basket and fry them in deep fat until they are light brown, keeping them continually in motion with a skimmer. Drain on brown paper and sprinkle with salt.

Fig. 45.— Vegetable Slicer

Cheese Sauce for Rice Croquettes

2 tb butter
⅛ tp pepper
1 c milk
2 tb flour
¼ tp salt
½ to 1 c grated cheese

Combine, using the White Sauce method (Book One, Lesson VII). After the sauce is cooked, add the grated cheese and more salt if necessary.

MEATS

Lesson XXIX

Flesh as Food (Reading)

Meat preceded vegetable diet:

"My dear fellow," said Beau Brummel, when asked why he did not marry a lady to whom he had been attentive, "the thing was impossible. I found that she actually ate cabbage!"

In the days of Beau Brummel and in the periods of Roman luxury and French lavishness, the meat courses were many and the vegetable viands few. The cooking of meats was carried to the plane of an art, as when a Roman emperor was able to invite his guests to sit at table on which rested a full-sized porker, boiled on one side and baked on the other. The cook was careful to preserve his secret, but it was recorded for the benefit of posterity. It seems that half the pig was covered with a thick paste of barley flour made with wine and oil, then placed in an oven where it roasted slowly. When the skin was browned, the other side was boiled, the paste removed and the pig served up in all the mystery of a culinary feat.

Vegetables must masquerade:

When vegetables were served at all in those days, they were made to counterfeit flesh foods, both in taste and appearance. It is recorded of a king that once on a long journey inland he was seized with a great longing for fish of a special kind. His cook cut a turnip into the semblance of one and fried it in oil, then seasoned and disguised it until his master was delighted and wondered how he procured the fish so far from the sea.

Epicures always meat eaters:

Epicures have nearly always been meat eaters, though the vegetarian cult is not without its lovers of good eating. By

such, those who eat to live rather than live to eat are regarded as mere stokers, putting food into the mouth and swallowing it, but never, in any proper sense of the word, eating.

A knighted beefsteak:

The kings of England have all been great meat-eaters and we need not wonder to find it solemnly recorded in Dr. Johnson's dictionary that King James I. knighted the loin of beef in a fit of good humor, and so it became the "sirloin."

When peacocks were poultry:

In those days the crane and the swan were favorite fowls, and the peacock was sometimes served up in his plumage by the beauty-loving French. The French have always thought highly of the decorative qualities of a dish, while the English have demanded that food be hearty and well-flavored even at the cost of appearance. The goose has held his own in ancient, mediæval, and modern times, but the turkey, which may well be called the American national bird, was introduced into England from Mexico as recently as the eighteenth century.

Kinds and classes of fish:

There are two distinct classes of fish. One is the scaly, or vertebrate, and the other the shell fish. The latter class includes the mollusks and crustaceans. It is possible, too, to divide the scaly fish into two classes — the fat and the lean. The fat, or oily, fish have the fat distributed through the body, giving the flesh a dark color. Examples of this class are the bluefish, salmon, mackerel, herring, shad, and eel. The lean, or white, fish have little fat except on the liver. Cod, halibut, haddock, whitefish, smelt, and flounder are examples.

Fish seasons:

Each fish has its special season. That of the bluefish is from May to October. The cod may be obtained throughout the year, but most kinds of fish are out of season at least during the spawning season. A striking exception to this is to be found in the shad, which has a finer flavor in the spawning season than at any other time of the year.

A king among fish:

The salmon is king of the fish and none other of the fish family has such curious habits. Beginning its existence in the fresh water of a river, it finds its way to the salt water of the open sea in due time, only to return, when it has reached maturity, to spawn in the waters that were its birthplace. Its strength and agility have been demonstrated over and over again and are the wonder of scientists, for the salmon seems to be able to scale almost any rapids or waterfall to reach its original home when spawning time comes each year.

Why cost of living is high:

In America the high cost of living is largely due to the growing scarcity of meat and the immense increase of population. The appropriation of the ranges, where formerly there was so much free pasturage for cattle and sheep, for private ranches and grain farms and even for cities and towns, has had much to do with this new shortage in the meat supply. As a consequence of the public recognition of this shortage, the government is taking various means of increasing and protecting the supply of all flesh foods, conserving the ranges that still exist, conserving the water supply to the same end, protecting the fisheries from willful depredation, and encouraging the raising of all kinds of fowls and other stock. Still, meat is a scarce article, and it behooves the careful housewife to get all she can from the piece that seems so small compared with the price she has to pay for it.

Ways of making meat go farther:

There are many ways of making a piece of meat go farther than it would if treated the same as some other commodity of ordinary price and low nutrient value. From, say, five pounds of the cheapest cut of beef it is possible to get a rich vegetable and meat stew, a palatable goulash, a vegetable soup, and even a chili concarne. A housekeeper cooking for three declares that she has supplied her family with six meals from five pounds of meat at ten cents a pound when sirloin steak was

selling for thirty cents a pound. In order to achieve this, she first made a stew in which little more than a pound of the juicy but tough shoulder was cut small and combined with a larger proportion of vegetables. The next day she boiled more of the meat and made a rich vegetable soup. From remaining bits of the stew, with its gravy and vegetables, she made baked hash, of which her family was fond. The third day she made chili concarne, grinding a pound of meat to combine with Mexican beans, onions, tomatoes, and ground chili peppers. There was ample in this dish for two meals and it was served twice, though on the day between the family dined on boiled beef with horseradish sauce. The sixth day found enough of the beef still on hand to make a delicious Hungarian goulash. Had the housewife bought an expensive steak of a size sufficient for a family of three, it would have provided but one meal and its cost would have been just about that of the five pounds cut from the juicy and richly flavored neck and shoulder.

Extravagance in digestion:

Any system of scientific cooking that does not take economy into account fails in its most important aspect. By economy here is meant a minimum of expenditure in the matter of digestive force as well as in the matter of money. The cook who squanders the digestive capital of her family is just as extravagant as she who squanders the financial capital, and even more culpable, for she invites illness, which is far worse than poverty.

A master of economy:

The cook who by his cleverness produced the porker both baked and boiled would have been a master of economy if confronted by the situation every housewife of moderate means faces today. His genius would have made the five pounds of beef produce twelve delicious meals instead of six, and he would have invented at least one or two of the dishes served. What we who live in a meat-loving age and who face a possible meat famine must do is to learn how to make one pound do the work of two or even three.

Lesson XXX

Cannelon of Beef

Materials used:

Class Rule	Home Rule
½ c chopped meat	2 lb beef cut from the round
8 drops of onion juice	½ tp onion juice
¼ tp salt	1 tp salt
a few grains of pepper	¼ tp pepper
1 tb beaten egg	1 beaten egg
½ tp chopped parsley	1 tb chopped parsley
½ tb chopped pork	2-inch cube fat salt pork
1 tb bread crumbs	1 c bread crumbs
2 tb milk	½ c milk

Utensils needed:

Meat grinder
wooden spoon
utensils for measuring
mixing bowl
egg beater
small baking pan

Fig. 46

Operations:

1. Prepare all the ingredients, following former rules.
2. Combine the ingredients.
3. Be sure the oven is ready; have it very hot for a small loaf, less hot for a larger loaf.
4. Shape the loaf. It should be well-kneaded so that it will retain its shape.
5. Place the loaf on a rack in the pan. Baste frequently while it is roasting.
6. Serve with Macaroni a la Italienne.

Macaroni a la Italienne

Materials used:

	Class Rule	
Half a stick of macaroni	a pinch of salt	2 tb tomato pulp
½ tb butter	a dash of paprika	1 tb grated cheese
½ tb flour	2 tb water	

Home Rule

¼ lb macaroni	¼ tp salt	½ c tomato pulp (rich)
2 tb butter	¼ tp paprika	¼ to ½ c grated cheese
2 tb flour	½ c brown stock or water	

Utensils needed:

Utensils needed for making sauce	measuring utensils
grater	granite pan

Operations:

1. Place the macaroni in boiling salted water and cook till it is tender.

2. Combine the ingredients as for tomato sauce. (Book Two, Lesson XLV.)

3. Add the cheese and heat until it melts. Serve very hot.

Serving:

Making a bed of the macaroni on a large hot platter. Place the beef loaf upon this bed and serve very hot. Beef cooked in this way is also good served with Brown Sauce (Book Two, Lesson XL). To serve, cut in thin slices.

FIG. 47.— Cannelon of Beef

Principles:

What cut of meat was used in making this loaf? What other cuts could have been used equally well? Give two reasons why these cuts were chosen for this food. State the principle underlying the cutting up or grinding of meat of this kind. Why is it necessary to add the eggs? When grinding the meat, what precautions should be taken? State two reasons why beef is the most popular of all meat foods.

There is one food principle without which a human body can not live — this is protein. It alone of all the food principles consumed is able to build up and repair body tissue. This is because it alone contains nitrogen, which is an essential constituent of all body tissues, and therefore must be present in any food which is to repair or build up that tissue. If this were not present in the food, one would starve to death, even though bountifully supplied with the other food principles. Their supply would prolong life longer than if no food were taken, it is true, but they could not prolong it indefinitely.

Meat is such a valuable and necessary part of our diet because the principal constituents of the solid parts of the meat are protein compounds. These are also present to some extent in the meat juices. But even though one does not eat a great amount of meat, one still will get enough of the protein, for nearly all the vegetables contain small quantities of it and some, as the legumes, contain great quantities. Nearly all the cereals contain large amounts, as do also eggs and milk. It is because protein is present in nearly all plant foods that some people are able to subsist on a purely vegetarian diet. But experience and experiments have both shown that the protein of animal origin is much more easily digested by the body than is protein of vegetable origin. Why this should be so is not known. But as meats are such an expensive food usually, they make an expensive source of protein. This fact forces the large proportion of mankind to turn to the cereals and vegetables for some of their protein supply; it also saves the great majority of people from eating too much protein.

Eating too much protein may cause severe disturbances within the body. As the protein is utilized by the body, certain waste products are formed which are very hard for the body to get rid of. When there is an oversupply of these nitrogenous waste products, as there is when an oversupply of protein is consumed, the organs whose function is to get rid of this form of waste matter, are overtaxed and disease may be the result.

TABLE SHOWING THE COMPOSITION OF ANIMAL FOODS, FROM "NUTRITION AND DIETETICS," BY WINFIELD S. HALL.

	Per cent Water	Per cent Protein	Per cent Fat	Per cent Carbo.	Per cent Ash	Calories Per lb.
Beef						
Flank	54.0	17.0	19.0	.....	0.7	1,105
Porterhouse	52.4	19.1	17.9	.....	0.8	1,100
Sirloin	54.0	16.5	16.1	.....	0.9	975
Round	60.7	19.0	12.8	.....	1.0	890
Rump	45.0	13.8	20.2	.....	0.7	1,090
Corned Beef	49.2	19.3	23.8	.....	4.6	1,245
Veal						
Leg cutlets	68.3	20.1	7.5	.....	1.0	695
Fore quarter	54.2	15.1	6.0	.....	0.7	535
Mutton						
Hind leg	51.2	15.1	19.7	.....	0.8	890
Loin chops	42.0	13.5	28.3	.....	0.7	1,915
Lamb	49.2	15.6	16.3	.....	0.85	967
Pork						
Loin chops	41.8	13.4	24.2	.....	0.8	1,245
Ham, smoked	34.8	14.2	33.4	.....	4.2	1,635
Sausage						
Frankfurter	57.2	19.6	18.6	1.1	3.4	1,155
Poultry						
Fowls	47.1	13.7	12.3	.....	0.7	765
Goose	38.5	13.4	29.8	.....	0.7	1,475
Turkey	42.4	16.1	18.4	.....	0.8	1,060
Animal Viscera						
Liver (sheep)	61.2	23.1	9.0	5.0	.....	.....
Sweetbreads	70.9	16.8	12.1	.....	1.6	.....
Tongue, smoked and salted	35.7	24.3	31.6	.....	8.5	.....
Brain	80.6	8.8	9.3	.....	1.1	.....
Fresh Fish						
Bass, large-mouthed, black, dressed	41.9	10.3	0.5	.....	0.6	215
Cod steaks	72.4	16.9	0.5	.....	1.0	335
Shad Roe	71.2	23.4	3.8	.....	1.6	595
Whitefish, dressed	46.1	10.2	1.3	.....	0.7	245
Preserved Fish						
Halibut, salted, smoked, dried	46.0	19.1	14.0	.....	1.9	945
Sardines, canned	53.6	24.0	12.1	.....	5.3	955
Salmon, canned	59.3	19.3	15.3	.....	1.2	1,005
Mollusks						
Oysters, solid	88.3	6.1	1.4	3.3	0.9	235
Round clams, free from shell	80.8	10.6	1.1	5.1	2.3	340
Mussels	42.7	4.4	0.5	2.1	1.0	140
Crustaceans						
Lobster in shell	31.1	5.5	0.7	.....	0.6	130
Crab in shell	34.1	7.3	0.9	0.5	1.4	185
Shrimp, canned	70.8	25.4	1.0	0.2	2.6	520

Rheumatism is a disease frequently caused by an overabundance of nitrogenous waste matter.

A glance at a table showing the percent of water, protein, fat, etc., in different kinds and cuts of meat, shows that in almost every instance there is more than fifty per cent of water present in the meat. The fact that meat does contain so much water in proportion to its other ingredients, helps to make it expensive as a source of protein. Another fact which the table shows is that fat meat contains proportionately less water. Round steak which was used in the preceding lesson, contains but little fat and it has a relatively large proportion of water. Why was the fat salt pork added?

Cleaning up:

1. Put all bits of waste material into the garbage can.
2. Save pieces of fat for trying out.
3. Take the meat grinder apart and wash and dry thoroughly before it is again put together.
4. Do not put the cogs of the egg beater in water.

Lesson XXXI

Veal Pot Pie

Materials used:

Class Rule	Home Rule
A small piece of veal	4 lb veal from shoulder
½-inch slice of bacon	a few ½-in. strips of salt pork or bacon
salt and pepper	salt and pepper

Utensils needed:

Stew pan sharp knife heavy board

Operations:

1. Wipe the veal with a damp cloth.
2. For home use, cut the veal into pieces suitable for serving; in the class room they will have to be cut much smaller.

3. Add a half-inch strip of bacon or fat salt pork for each piece of veal.

4. Cover the veal with cold water.

5. Bring quickly to the boiling point and boil five minutes.

6. When the meat has boiled 5 minutes set where it will simmer, and skim off any floating particles.

7. Let it simmer until very tender.

8. When nearly tender, add salt and pepper to taste.

9. Ten minutes before serving add a biscuit mixture.

Biscuit Mixture

Materials used:

Class Rule	Home Rule
¼ c flour and enough more to handle	2 c flour
$\frac{1}{16}$ tp salt	½ tp salt
¼ tp cream of tartar	2 tp cream of tartar
⅜ tp baking powder	3 tp baking powder
2 tb sweet milk	1 c sweet milk

Utensils needed:

Utensils for measuring	cutter which will cut dough into rings
utensils for mixing	
bread board and rolling pin	

Operations:

1. Measure the ingredients.

2. Mix the ingredients. The dough should be as soft as can be handled.

3. Pat out the dough on the board. Cut it with the cutter into round rings.

4. Add the biscuit mixture to the meat. Let it cook ten minutes or

5. Cook the dumplings in a steamer over hot water. This method is preferable because then they need not be removed from the fire until the instant they are to be served.

6. If the stock from the meat is rather thin, thicken it with flour well mixed with cold water.

7. If there is not enough broth, add a cup of tomato pulp.

Serving:

Have the platter hot. Place the meat in the center of the platter and the dumplings at the ends. Pour the sauce over the whole. This makes an excellent dinner dish.

Principles:

What cuts of meat are most suitable for stews? (See Book Two, Lesson XLI, Table.) Give two reasons why these cuts are chosen? What effect does cold water have upon meat? What is the effect of the boiling temperature of the water? Why is it desired to extract some of the juices of the meat and to retain the others? Is a stew an economical dish? What nutrients are added to a stew when dumplings are added? What is the effect of the boiling temperature upon the protein constituents of the meat? Of the simmering temperature upon connective tissue and tube walls?

Because much waste is caused by improper cooking of meats and also much of the available nutrients are thus made indigestible, the proper cooking of meats is one of the most important branches of cooking. It is so easy to render a choice piece of meat almost unfit to eat through ignorance, and it is just as easy to render a naturally tough and somewhat undesirable piece of meat palatable, tender, and digestible, if one knows how. In these days when prices are continually going up, and the cost of living is thus continually on the increase, it is essential that the housewife should know how to buy and to prepare meat in such a way as to get the greatest value for the money. To do this requires skill and intelligence of the rarest type.

The two essential factors in cooking meat are heat and moisture. Heat, applied in the right way and in the right amount, develops the flavor; the moisture insures tenderness. When meats are roasted or broiled, they are subjected at first to a heat of several hundred degrees. Such intense heat

quickly makes a coating of coagulated albumin on the outside of the meat. What is the process called which produces this coat? After this coating of albumin is obtained, the heat is lowered and the inside of the meat cooked at a more moderate temperature. But such intense heat quickly hardens connective tissue, thus making the meat still more tough. Hence only tender cuts may be roasted or broiled. Long cooking at a low temperature, such as stewing and making soup, will render connective tissue soft and will partly dissolve it. Hence meat containing much connective tissue is chosen to prepare in this way. What substance is extracted from connective tissue by this method of cooking? What is its value in human nutrition? Because meats suitable for stews are not desired by a class of people who can afford to pay higher prices for the more tender cuts, the tougher cuts are usually sold several cents cheaper a pound. Since they can be made as palatable as the more expensive cuts, and since they are, on the whole, equally nutritious, every housewife should seek to acquire skill in this kind of cookery. What other reason is there for cooking meat besides bringing out the flavor and making it more digestible?

Rule a paper into several columns. At the head of each column write one method of cooking meat. In the columns write the names of all the cuts that may be cooked by each method. Designate the animal from which each cut is taken.

When buying meat for stewing, if possible get a cut containing some fat. If the meat does not naturally contain fat, how may it be supplied? The fat adds flavor and nutritive value, and aids in making the meat more balanced. Because meat for stewing usually does contain some fat, it is not necessary to add shortening to the dumpling batter. What is a dish called in which proteins, fats, and carbohydrates are combined? What is it called when these food principles are combined in the right proportion? Which kind is a stew?

There are three classes of stews: (1) The brown stew, (2) the white stew, and (3) the mixed stew. Brown stews are

often called ragout or haricot; they are made by browning or sautéing the meat before the water is added. What are two results from this method of treating meat? White stews are often known as fricassees; they are made by putting the meat in cold water, which is then brought to the boiling point. Mixed stews are often known as Irish stews; they are made by cooking potatoes, rice, carrots, and other vegetables with the meat. In which class does the stew made today belong?

The fireless cooker is a boon to all housewives, especially for those who find it necessary to economize. Fuel is often quite an item of expense. Whenever it is not necessary to keep the range going to keep the room warm, much expense may be saved by using the fireless cooker for all dishes requiring long cooking. Often, too, during the hot summer months, the kitchen may, by its use, be kept more cool and comfortable.

Cleaning up:

1. What should be the temperature of water used for soaking pasty dishes?
2. What should be done with the flour on the bread board?

Lesson XXXII

Crown Roast of Lamb

Materials used:

A crown of lamb salt and pepper 3 or 4 slices of fat salt pork

Utensils needed:

Baking pan cup for inserting in the crown

Operations:

1. Place the crown on the rack in the baking pan.
2. Insert a cup in the center of the crown.
3. Cover the ends of the bones securely with fat salt pork.
4. Place in a hot oven to sear. After fifteen minutes, lower the heat and add a little boiling water.
5. Baste the roast often, using the drippings in the pan.

6. When about half done, add the salt and pepper.
7. Cook about sixty minutes.

Serving:

Place it on a round platter. Remove the pork and cover the tips of the bones with paper frilled caps made for such purposes or serve the roast without decorating the ends of the bones. Remove the cup and fill the center of the crown with peas, Saratoga chips, or French fried potatoes.

FIG. 48.— Crown of Lamb Ready to Serve

When the crown is prepared at the meat-shop, the joints of the backbone are severed. For this reason, a crown is an easy dish to carve, for all that needs to be done is to continue the separation of the chops of which it is composed. Serve a chop to each person with some of the vegetable with which the crown is filled.

Principles:

The loins of pork, lamb, or mutton are the only cuts used for this attractive roast. The two corresponding sides of the loin are chosen. The backbone is trimmed off and it is severed at the joints just as it would be if it were cut into chops. Care should be taken not to expose more meat than is necessary, for the less meat exposed the less will be the danger of having the meat juices escape. The rib bones must next be trimmed so they will all be of equal length. Then the meat on them must be scraped down to the eye of tender meat, leaving the bone clean. The pork may be tied on in strips or it may be fastened in a cube upon the ends of the bones. It keeps the bone from

becoming charred and also adds flavor and juiciness to the meat. When all is ready, the two pieces of loin are taken up and fitted to each other in such a way that they form a circle with the pieces of the backbone forming the outer circumference. The two halves may be held in position either by sewing them together or by winding twine once or twice around the whole. This will have to be removed when the roast is placed on the table.

When buying lamb or mutton for a crown roast, the flank is often weighed with the loin and the purchaser pays for it also, at the same price paid for the loin. As this makes a very excellent stew, one should see to it that it is sent home with the crown. Some dealers make it a practice to keep this cut and sell it again for stew to some other customer. For this reason one should be on guard when buying.

A study has now been made of every variety of food used by man except poultry, fish, and other sea food and game. Of all these, those which furnish protein are the most important. Our most important source of protein is in food of animal origin. But the foods we get from animals are not alike. Milk, for instance, is an animal food, but because of the sugar it contains it is classed with wheat and other carbo-nitrogenous foods. For convenience, therefore, animal foods may be divided into six classes, each class having characteristics which separate it from all the other classes. These classes are: Meat, such as beef, pork, poultry, game, and internal organs; gelatin; soups and commercial beef extracts; fish and other animals living in the water; milk and foods made from it; and eggs.

Not all meats are equally good sources of protein, because they are not equally digestible. Scientists have experimented with different kinds of meat to determine their digestibility. Experiments on human beings and in the laboratory have both shown that beef and mutton are the most easily digested of all meats. Beef fat is more easily digested than mutton fat, however. Veal is harder to digest than beef. This seems strange because the connective tissue of veal is more readily

dissolved than is the connective tissue of beef. What is the probable reason for the difficulty in digesting veal? Pork is the least digestible of all the common meats. This is because the little muscle fibers are surrounded by beds of fat. No food surrounded by fat is readily digested. For this reason, fat cuts of meat are likely to be harder to digest than lean cuts. However, as fat furnishes so much heat and energy and does not make any perceptible difference in the digestion of a healthy person, moderately fat cuts are to be preferred to very lean cuts from the same animal, since such cuts contain an equal amount of protein, the fat replacing water only. Bacon is an exception to the other cuts of pork, it being very readily digested. This is because the fat of bacon exists in crystals of slightly different granular form from those of the rest of pork. Experiments have also shown that meat containing short fibers is more readily digested than meat containing long fibers. How should the cooking of meat affect its digestibility?

Cleaning up:

Care for utensils as previously directed.

PROBLEMS

1. Which are the most expensive cuts of beef to buy?

2. How do you judge a good quality of beef for a roast?

3. Which are the best cuts for stews, roasts, corned beef, and Hamburg steak?

4. If 50 cents is allowed for the purchasing of meat to be served for dinner to a family of five grown people, what is the most economical cut to buy? State your reasons.

5. What are some of the things that should be constantly held in mind in determining the best markets in purchasing meats?

6. What has been done by the housewives in your own community for the betterment of conditions in the public markets?

7. State three different dishes that can be made for a family of six people from two pounds of left-overs from a pot-roast of beef.

Lesson XXXIII

The Power of Good Cooking (Reading)

What constitutes good cooking?

It is less the recipe than the judgment of the cook that makes the perfect dish. The flavoring of a dish or the sauce in which it is served are quite as important as the regulation of heat, basting, and all the small services that have so much to do with the success or failure of the dish.

Subtle skill of French cooks:

Perhaps it is not true that the chief cook of Louis XIV of France served up his master's old slippers with such exquisite skill that the king and all his courtiers declared it to be the best dish they ever tasted, but another feat of the same culinary artist is adequately vouched for. One Good Friday he served the king with a dinner, apparently of meats and birds, but really nothing but vegetables prepared with strict regard for Lenten rules.

Great men were cooks:

When one considers that the elder Dumas of France, Lord Bacon of England, and David Hume, the great historian, were all proud of their ability to cook, the art seems sufficiently well endowed with great names. When Hume retired from public life, it was to become a cook rather than a horticulturist, as he might have done in contemporary times.

Great cooks are men:

All the greatest cooks have been men. This is probably due to the fact that men have better appetites than women, that they live more vigorous lives, and are more frequently in the open and devoted to athletic games and sports. Every woman knows that a hungry man is a cross man. Even though he be a saint by reputation and approximately a saint in fact, a man who goes over-time without food is more or less irritable. The more vigorous his body, the more vigorous his appetite.

Some wonderful historic cooks:

Wellington's cook has won a place in history because he stuck to his post on the day of Waterloo, incredulous of defeat though assured by thousands of craven fugitives that the day was lost.

Charles the Twelfth owed to one of his cooks a wonderful recipe for roasting a fowl while on the march. The fowl was larded, trussed as if for roasting, and stuffed with butter. A piece of steel of suitable size and shape was heated to a point below redness and inserted in the fowl, which was placed in a tin box, wrapped around with a woolen cloth, and placed on a soldier's back. In a few hours, at the end of the march, it was beautifully cooked. The recipe seems a sensible one, worthy of a trial, say in the tonneau of a motor car or in the cabin of a motor boat.

Banquets made prominent by historians:

In ancient and mediæval times, cooking held a more important place in the lives of the people than it does today, though not so generally important as the records of banquets and descriptions of dinners would imply. The banquets and dinners were almost the only occasions celebrated by the bards and other literary men, and were, therefore, made conspicuous in the annals of the time.

Declines as an art; rises as a science:

As an art for the tempting of the appetite, cooking has declined since ancient times, but as a science for the nourishing of the body and brain, it has grown. The human appetite for food has changed little in character since the ancient Romans gorged themselves with meats and sweets. But nowadays we think more about what we call "food values" than they did in those days or even a century ago. We have learned that a dinner all vegetables is not so good for the digestion as a dinner that is part vegetables and part meats. And we do not eat many kinds of meat at a single meal as they did when Nero set the fashion of gluttony for wealthy Romans to follow. When-

ever a people has permitted itself to be ruled by its appetites, it has quickly lost its high place among nations. The gluttonous Romans grew to like eating so well that they regularly resorted to emetics to rid themselves of the food eaten that they might continue their banquets for an entire day or night at a time. There is no such intemperate eating nowadays, although many persons suffer from a too generous gratification of their appetites, and young people will do well to guard against eating too much or too hurriedly.

Appetite should regulate food supply:

Protein and butter fat and starch must be correctly proportioned in our diets or our systems will suffer from the lack of balance. You may have noticed that your appetites regulate your food supply. If you go away on a camping trip and run short of meat, you would find yourself growing very hungry for meat foods, while you would care less and less for vegetables. When your meat supply was replenished, you perhaps would eat twice as much meat as usual at first, until your system was again properly supplied. It is possible to become fruit hungry or vegetable hungry in the same way.

What the ancients ate:

Probably the ancients ate more meat than we do. Probably they required more. In those days there were more people employed in the open air and at manual labor; fewer confined indoors. Soldiers, sailors, road-makers, peasants, and all others employed out of doors would require more meat. Still we have found in the ancient city of Pompeii, so tragically buried under hot ashes and lava from Mt. Vesuvius, loaves of wheat bread and many vessels used for cooking vegetables and cereals. We have learned much from the ancients about the proper use of oils in foods and there has been a revival of interest in spices and flavors. But we have gone a long way ahead of them in our knowledge of what constitutes the proper nourishment of the body.

POULTRY

Lesson XXXIV

PREPARING CHICKEN FOR ROASTING (Demonstration Lesson)

Materials used:

A fowl	sage or poultry seasoning	pepper
1 c cracker crumbs		⅔ c scalded milk
¼ c melted butter	¼ tp salt	

Utensils needed:

A heavy board	dish containing cold water
sharp, pointed knife	utensils for making the dressing
a few wooden skewers	

Operations:

1. Light the gas flame. Hold the chicken over this to burn or singe off the hairs which cover its body. Turn the chicken so as to singe it on all sides.

2. Lay the chicken on the board and with the sharp knife remove the pin feathers.

3. Cut off the head.

4. If the chicken is a young one, cut carefully through the skin one and one-half inches below the leg joint. Do not cut through more than the skin.

5. Lay the leg of the chicken on the edge of the board at the place where the cut in the skin was made. Press the leg downward till the joint snaps.

6. Take the leg in the right hand and hold the chicken firmly in the left. Pull the leg gently till it separates at the joints and comes out with the tendons attached. Repeat this process with the other.

7. In an old fowl the separation is a little more difficult. Cut the skin at the same place.

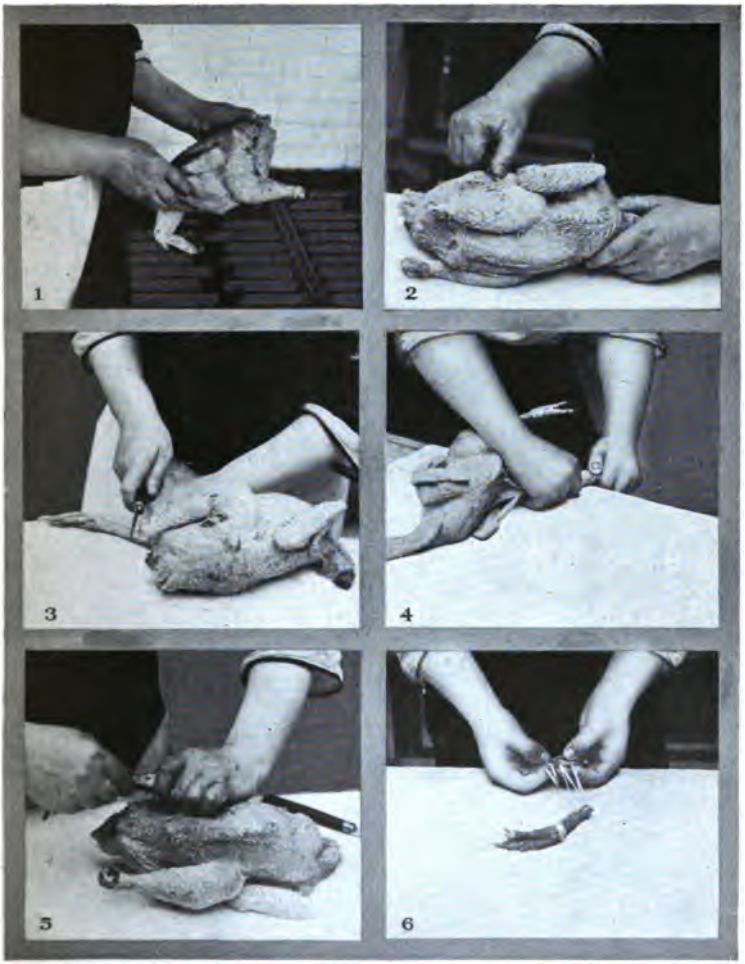

Fig. 49.—

(1) Singeing the Bird
(2) Removing the Pin Feathers
(3) Cutting below the Joint
(4) Laying on Edge of Board
(5) Pulling out the Tendons
(6) Leg with Tendons

Fig. 50.—

(1) Inserting the Skewer
(2) Cutting from Breastbone
(3) Removing the Oil-bag
(4) Pulling the Skin of Neck
(5) Removing the Crop
(6) Putting in the Dressing

8. Find a tendon by pushing the skin back. Loosen it slightly by means of one of the skewers.

9. Insert the skewer under it and twist the skewer gently around to loosen the tendon from the muscle. Be careful not to break it.

10. Repeat this until all the tendons are withdrawn.

11. Break the joint the same as in a young chicken and draw out.

12. Find the breast bone. Lay the fowl on its back. Make a cut through the skin from the tip of the breastbone backwards large enough to admit the hand.

13. This cut will enable one to take out the entrails. Insert the hand, keep the fingers close to the breastbone until the heart and liver are reached. Loosen all tissues as you proceed. Carefully remove the liver and heart, taking care not to break the gall bladder, which lies on the left side under the liver.

14. Again put the hand in, loosen all membranes along the back. Place the hand behind the gizzard and pull the loosened mass out.

15. The lungs, a spongy red mass, are on either side of the backbone, enclosed by the ribs. The kidneys lie in the hollow near the end of the backbone. Remove these last of all.

16. The giblets are the liver, heart, and gizzard. Place these in the water.

17. Remove the oil-bag from the tail.

18. Pull the skin of the neck down to the breast and cut off the neck close to the body. Place the neck with the giblets.

19. Insert the fingers at the neck and remove the crop.

20. Throw the crop, oil-bag, and entrails into the garbage can. Save any fat which may have been removed.

21. Wipe the bird, inside and out, with a clean damp cloth. Why should it not be washed in water?

To make the dressing:

Melt the butter in the scalded milk.

Roll the crackers. Mix the seasonings with cracker crumbs.

Pour the milk and butter over the cracker crumbs.

To stuff the fowl:

1. Lift up the skin of the neck and put the dressing by the tablespoonful into the cavity left by the crop. Do not fill the skin tight, as the stuffing expands during the baking. The skin of the neck should fold back over the back of the fowl, where it can be kept in place by stitches.

Fig. 51.—
(1) Forcing Skewer through Thigh. (2) Fastening the Legs in Position. (3) Ready to Roast

2. Fill the cavity left by the other organs in like manner. Do not fill too full.

3. If the body is full of dressing, sew the skin together; if not, fasten with skewers.

To truss the fowl:

1. Press the thighs up close to the body, cross the legs up over the back near the tail.

2. Take a long skewer, force it through the thigh, through the body, and out through the lower thigh.

3. Tie the legs in position at the back.

4. Fold the pinions of the wings up over the skin of the neck on the back.

5. Pass a skewer through a wing, through the skin of the back, and out through the other wing.

Fig. 52.— Cleaning the Gizzard

To roast a chicken:

1. Place it on its back on a rack in the roasting pan.

2. Rub the entire surface with salt.

3. Rub 3 tb butter and 2 tb flour until creamy, then spread the breast and legs with this mixture.

4. Dredge the bottom of the pan with flour.

5. Place the chicken in a hot oven and do not reduce the heat until the flour has been browned.

6. Melt $\frac{1}{4}$ c butter in $\frac{2}{3}$ c boiling water for a basting liquid.

7. When the flour in the bottom of the pan has browned, baste the chicken with the basting liquid and lower the heat of the oven.

8. Baste frequently, using the fat in the pan after the basting liquid is gone.

9. Turn the fowl frequently so that it will brown evenly on all sides. When the breast meat is tender, the chicken is done. A four-pound chicken requires about one and one-half hours.

To clean giblets:

1. Remove the membrane surrounding the heart. Cut away all the arteries and veins.

2. Carefully cut away the gall bladder, which is the green sac on the under side of the liver, and all green pads, being careful not to allow any of the bile to escape.

3. Cut through the thickest part of the gizzard, down as far as the inner lining.

4. Remove the thick cartilaginous layer of the gizzard.

5. Also carefully wash the neck, cutting away any bloody, clotted portions.

6. Place the giblets and neck in a little stew pan, cover them with cold water, and bring to the boiling point.

7. Let them boil until tender.

To make giblet gravy:

1. When the giblets and neck piece are done, remove them from the pan. Chop the giblets fine. Save the water in which they were cooked.

2. Pour off the liquid in the pan in which the chicken roasted.

3. Skim off 4 tb fat from this liquid into the baking pan.

4. Add to this 4 tb flour and let it brown.

5. Add 2 c of the sauce in which the giblets cooked.

6. Cook this five minutes, season with salt and pepper to taste.

Serving:

1. When done, remove the chicken to a hot platter. Remove all skewers and stitches and garnish the platter with tips of celery. When placing the platter before the carver, be sure that the head is towards the left.

To carve a fowl:

Place the fork securely in the fowl at the highest point of the breast bone. Cut off the leg and second joint on the side farthest from the carver. Do this by making a circular cut around the joint. Cut the wing from the same side in the same way. Be sure to strike the joint at the right place so as not to dull the carving knife and so the tendons will be severed. Then remove the leg and wing from the side nearest the carver. After the legs and wings are removed, cut thin slices from the breast slanting the knife from the front of the breast bone down toward the wing joint. Do this on both sides. Cut through the joint separating the drum-stick from the thigh, or second

joint. Serve a piece of light meat and a piece of the dark upon each plate. Take the dressing out with a spoon, placing a spoonful upon each plate.

Principles:

Does this method of roasting chicken differ materially from that used in roasting beef? Would a very old fowl be good roasted? Give the reasons for your answer. Poultry may be cooked in any of the ways in which other meat is cooked. The dressing is added in order that the chicken may appear more plump when it is brought upon the table. The mixture of flour and butter forms a crust over the chicken which prevents the escape of the juices. For this reason it is permissible to rub salt on the chicken before placing it in the oven.

Chicken belongs to that class of birds called poultry. Poultry is the term applied to any bird which has been domesticated for its eggs or its flesh or both. Chickens are cultivated both for their eggs and their flesh. Poultry raising is a very important industry in this country, and the products are worth many million dollars. All the present kinds of poultry were once wild. Several wild birds, as the quail, or Bob White, of our country, are now being domesticated that there may be a steady supply of their flesh, which is much esteemed for its flavor. The most important domestic birds used for food are chickens, turkeys, ducks, and geese.

There are several birds much prized for food which are not domesticated. These are known as game birds. Examples of such are the wild ducks and geese, prairie chickens, quail, pheasants, and partridges.

Turn to the table (page 120) and see if you can tell in what respects the flesh of chicken differs from that of beef. Which contains, on the average, more fat? Which would then be the more easily digested? For this reason poultry is often used for invalids who have an impaired digestive system. But, on the whole there is not much difference in the nutritive value of poultry, beef, and the other common meats as food products.

In the lesson today, several new terms have been introduced. These will need some explanation. To *draw* a chicken means to remove the entrails and other organs. *Giblets* is the name applied to the edible organs of poultry. To *truss* a fowl means to make the wings and legs lie close to the body of the fowl by means of skewers or other contrivance, when preparing it for cooking.

Cleaning up:

1. Place the head, feet, unused internal organs, and other waste matter in the garbage pail.
2. Cleanse all utensils, and put them away as usual.

Lesson XXXV

Chicken Fricassee

Materials used:

A 3½-pound fowl
1 qt cold water
onion
one or two cloves
1 tp salt
4 tb butter
4 tb flour
bread for making toast points
a quantity of butter, pork fat, or drippings for sautéing

Utensils needed:

Stewpan
frying pan
meat board
sharp, pointed knife
dishpan containing cold water

Operations:

1. Singe the chicken as in the preceding lesson.
2. Cut off the head.
3. Cut the skin between the legs and the body.
4. Bend the leg back until the joint snaps, then sever the leg from the body at this joint.
5. Cut the wings off in the same way.
6. Cut the foot off at the leg joint, wash the leg, and sever the drumstick and second joint at the joint, which can be found by moving the leg back and forth.

7. Place the wings and pieces from the leg in the stewpan.

8. Place the knife at the upper part of the breast bone and cut down to the wing joint, keeping the knife close to the bone. This cuts off the wishbone with a large piece of flesh. Place it in the stewpan.

9. With a knife remove the meat on either side of the breast bone. Place it in the pan.

10. Cut the neck off close to the body. Remove any bloody portions and put the remainder in the stewpan.

11. On either side of the tail is a pointed bone. Find this. With the knife inserted between these bones and the tail, cut off strips of flesh. Wash quickly and put them in the stewpan.

Fig. 53.— Grasping Breastbone and Backbone

12. Cut off the oil bag. Then separate the tail piece from the remainder of the carcass.

13. Grasp the breast bone in one hand and the backbone in the other. Force them apart. Remove the entrails.

14. Cleanse the giblets as directed in the preceding lesson. Add them to the remainder of the chicken.

15. Quickly wash the skeleton and add the bones to the meat.

16. Stick two cloves in the onion and add these to the meat.

17. Cover the meat with cold water and bring quickly to the boiling point, then simmer until done.

18. Add the salt when the meat is about half done.

19. When done, strain the chicken and bones from the broth. Set the broth aside.

20. Remove the bone.

21. Sprinkle the meat with salt, dredge in flour, and sauté in butter, drippings, or pork fat.

The Gravy

1. Melt the butter, add the flour, and mix the two ingredients.
2. Heat the stock to the boiling point, pour it gradually upon the butter and flour, and let the mixture boil.
3. Season to suit the taste.

Serving:

Arrange the neck, giblets, and tail in the center of a hot platter. Lay the breast pieces and wishbone on top of these; cross the drumsticks at one end of the platter and the second joints at the other. Arrange the wing and side pieces at the sides. Pour the gravy over the meat, and garnish around the edges with toast points.

This dish may also be served in a border of boiled rice. Removing the bones before serving facilitates the serving and also improves the appearance of the prepared dish.

Principles:

An old fowl is the best to use for a dish like this. Its connective tissues are made harder by the quicker processes of cooking by roasting or broiling; whereas the low temperature in the simmering process partially dissolves the tissues and renders them tender and palatable. Young chickens should never be cooked in this way as the flavor of roasted meat is more pronounced and more agreeable than that of stewed meats. If nothing but old fowls are available for roasting, they may be rendered more tender by first being parboiled.

A glance at the table of the composition of meat shows that fowls which live in water a part of the time have a greater percentage of fat in their meat. Turkey also contains more fat than chicken. Water fowl have a great deal of fat intermixed with their muscular tissue because it aids in making their bodies light; and living so much upon the water, as they do, their

bodies need to be relatively warmer than do the bodies of birds who spend their time upon the land.

How does the presence of fat affect the digestibility of meat? It is because the flesh of ducks and geese contains so much fat that it is difficult for some people to digest it.

Cleaning up:

Throw bones, feet, and other refuse in the garbage can.

Lesson XXXVI

Boned Chicken

Materials used:

A young fowl

Utensils needed:

A board
sharp, pointed knife
paper on which to place waste matter

Operations:

1. Singe and remove the pin feathers, head, tendons, and feet as directed in the previous lesson.
2. Loosen the skin around the end of the leg bone.
3. Lay the bird on the board, breast side down.
4. Cut the skin on the middle of the back half-way down from the neck.
5. Find the backbone. With the back of the knife or the fingers, scrape the meat from the backbone down to the free end of the shoulder-blade.

Fig. 54.— Pushing the Flesh from the Collarbone

6. Free the shoulder-blade from flesh. Keep pushing the flesh away till you reach the joint connecting the wing to the body.

7. Remove the tip of the wing at the joint.

8. Push the meat away from the bone in the wing, being careful not to tear the skin.

9. Repeat this process with the other wing and shoulder-blade.

10. Push the flesh away from the collarbone down to the breastbone. Be careful not to tear the skin on the breastbone.

Fig. 55.— Pushing the Flesh from the Bone in the Second Joint

11. Separate the crop from the flesh.

12. Scrape the flesh off the ribs. Be careful not to puncture the membrane lining the body cavity.

13. Push the flesh away from the bone in the second joint then from the leg. Pull it off just as a glove finger is pulled off when it fits tightly. Do this with the other leg.

14. Free the skin from the backbone. Lift the skeleton away from the meat.

Force Meat for Boned Fowl

2 lb fresh pork	½ tp black pepper
2 lb veal or chicken meat	1 tp crushed and sifted sage
1½ tp salt	1 c bread crumbs

stock or milk to moisten the ingredients

Operations:

1. Force the pork and other meat through a meat chopper.
2. Mix the seasoning with bread crumbs.
3. Mix all the ingredients and moisten them with milk for stock.

4. Wipe the fowl inside and out and turn the legs and wings so that the skin side is out.

5. Fill the legs and wings with force meat. Fill very full because the force meat, unlike the cracker crumb stuffing, does not expand in cooking.

6. Sew up the slit in the skin from the neck down. Then fill the body full.

7. Truss and skewer the wings and legs in shape just as in preparing a fowl for roasting.

8. Fasten strips of pork over the legs.

Fig. 56.— Lifting the Skeleton from the Meat

9. Place on a rack in a roasting pan. Roast as any fowl. Allow 2½ hr. to 4 hr., according to the size of the fowl. A long time is required because of the pork used in the filling.

10. Prepare the neck, tips of the wings, and giblets as in the preceding lesson. If desired, the bones may be separated from the entrails. Cook all the bones for stock.

11. Serve the fowl with giblet gravy.

Serving:

This makes a very easy dish to serve because all the bones have been removed. The wings and legs should be removed first of all and then the fowl can be sliced straight across. It may be served at dinner. It also makes a fine picnic or luncheon dish to serve cold.

Principles:

A great deal has been said about the food value of poultry and its desirability as an article of diet. It is interesting to learn how poultry is prepared for the market.

There are no great slaughter houses in which hundreds of

thousands of chickens, turkeys, ducks, or geese are prepared for market, as there are for the preparation of cattle, sheep, and hogs. The greater part of the poultry eaten in the United States is prepared for the market on the farm on which it is reared. Because this is so, no set standard can be applied, as is done in the slaughtering of cattle, and there can be no government inspection of the finished product. Hence when buying poultry, it is absolutely necessary that each housewife should know the marks of a good fowl.

As in the handling of other foods, so in the handling of poultry, the greatest care and cleanliness should be exercised. Why is it necessary to keep flesh foods especially free from bacterial contamination?

It is best not to give the fowl any food for twelve hours previous to the time of killing. A fowl treated thus is much easier to clean. There is a large artery in the roof of the mouth. When this is severed the fowl quickly bleeds to death. This is the most humane method of killing fowls. The fowl should be hung up by its feet so that the blood may quickly run out of the body. As soon as all the blood has run out, the bird should be picked. In picking a fowl, one should be careful not to tear the delicate skin. The feathers come out more easily if the bird is picked before it has become cold. Many people follow the practice of immersing the bird in scalding hot water; this loosens the feathers so that they come out easily, but it also injures the good wholesome color of the skin. For this reason fowls should always be dry picked.

After a fowl has been plucked, it should be drawn, that is, the viscera should be taken out. Experiments have shown that a carefully drawn bird will keep from two to three days longer than an undrawn bird. The viscera contains matter which is always in a more or less moist state and thus decomposes more rapidly than the tissues of the fowl. Now if this matter is left within the fowl and decomposition sets in, juices containing dissolved bodies having an unpleasant flavor from the decom-

position processes can very readily pass through the walls of the intestines into the body of the bird. In many localities birds are still prepared for the market without being drawn. Wherever this method is practiced, public opinion should be aroused against it. After a bird is drawn, it should be washed thoroughly inside with a little salted water. The salt in the water will act as a preservative.

If the fowl is to be kept some time after it is plucked and drawn, it should be placed where the animal heat may leave it as quickly as possible. Why is this? The lower the temperature at which it is kept, the longer the fowl will keep sweet and fresh.

There are many signs by which the housewife can tell a young fowl from an old one; good poultry from poor. When a fowl has sharp bony angles on the breastbone and otherwise presents an angular appearance, it lacks in tender white meat and is therefore not desirable. When the skin is full of pin feathers, one may be sure that the bird in question is a young one. When the skin is tight and drawn, the bird was probably scalded before it was picked. A clear yellow-colored skin, free from blotches, indicates the choicest fowl. The best way to make sure whether a fowl is a young or an old one is to press the point of the breastbone farthest from the head, between the thumb and forefinger. If it bends easily from side to side the fowl is very young; when it is brittle the fowl is about a year old; when it is tough and hard the bird is very old. Some dealers do not like to have their fowls examined in this way, because the fowls will not bear inspection; these dealers break the breastbone of their old birds thus rendering the test valueless. When the feet are left on, the age can be told by them. The feet of a young fowl are soft and smooth; in an old fowl they are hard and rough. The claws of a young fowl are short and sharp; in an old fowl they are long and blunt. Very young fowls have no spur; as the fowl grows older the spur becomes longer and gradually becomes more and more crooked. In a fresh fowl

the feet feel moist, soft, and flexible and the eyes are bright and full. The longer the bird has been dressed, the more shrunken the eyes will become and the harder and drier the feet will feel. If the bird has been kept so long that decomposition has set in, the body will have greenish spots upon it. Often fowls are kept a long time in cold storage. Birds so kept are packed very closely together in boxes. When these are taken out and hung up, they have rather a squeezed look as compared with freshly killed fowls.

Cleaning up:

1. Throw all waste matter in the garbage can.
2. Carefully clean all the utensils and put them in their proper places.

Additional Recipes

Roast Turkey

Prepare the turkey in the same way the chicken was prepared. When ready to roast, place it on its side on the rack in the dripping pan, and rub its entire surface, first with salt, then with butter and flour rubbed together, just as was done with the chicken. Also dredge the bottom of the pan with flour, lower the heat and baste with butter and water when this is browned. Baste every 15 minutes until the turkey is done and turn it frequently that it may brown evenly. If it seems to be getting too brown, cover with buttered paper; this will prevent its burning. For the dressing, use twice the quantities given in the directions for the roast chicken. Chestnut dressing and oyster dressing are much used for turkeys. Garnish the platter upon which the turkey is served with parsley or celery tips. Serve with it cranberry sauce or jelly and giblet gravy.

Chestnut Stuffing

3 c French chestnuts	⅛ tp pepper
½ c butter	¼ c cream
1 tp salt	1 c cracker crumbs

Shell and blanch the chestnuts. Cook them in boiling salted water until they are soft, then drain them and mash very fine. Add the seasoning,

cream, and half the butter. Butter the cracker crumbs with the remaining butter and add these to the chestnut mixture.

Oyster Stuffing

3 c bread crumbs
½ c melted butter
salt and pepper to taste
1 pt oysters
a few drops of onion juice

Mix the ingredients given, add the oysters, which have been cleaned and drained from their liquor.

Roast Goose

As a goose contains much more fat than does a turkey or chicken, it needs somewhat different treatment when being prepared. Singe and remove the pin feathers. Prepare a hot soapsuds, using a pure soap. Scrub the goose in this, then rinse in cold water, and wipe. Then draw in the same manner that a chicken is drawn, and wipe out the inside with a damp cloth. Fill with the dressing. As the legs of the goose are shorter than those of a chicken or turkey, it has to be trussed differently. After inserting the skewer, wind a string twice around one leg bone, then around the other, pulling the legs up to within an inch of each other. Draw the legs close to the back, cross the string under the back, fasten around the skewers and tie. Place on the rack in the roasting-pan, sprinkle with salt, and lay a few thin strips of fat salt pork over the breast. Place in a hot oven. Baste very often. Remove the pork the last half hour of the baking. If desired, the pork may be dispensed with. Garnish with celery tips, parsley, and bright red cranberries. Make a gravy, using a little of the fat in the pan. Save the remainder for frying purposes. Serve with apple sauce.

Potato Stuffing

2 c hot mashed potato
1½ c soft stale bread crumbs
¼ c finely chopped salt pork
1 finely chopped medium-sized onion
⅓ c butter
1 egg
1½ tp salt
1 tp sage

Mix the ingredients thoroughly.

Additional Recipes for Utilizing Left-Overs of Poultry

Chicken Loaf

4 lb chicken
1 tp salt
¾ c milk
⅛ tp paprika
½ c bread crumbs
3 eggs

Force the meat through the meat-chopper. Work in the seasoning and crumbs. Add the well-beaten yolks, and then the milk gradually. Season more highly if necessary. Fold in the stiffly beaten whites of eggs and bake in a well-buttered mold placed in a pan of hot water or steam 2½ hours.

Scalloped Chicken

Butter a baking-dish. Arrange alternate layers of cold cooked sliced chicken and boiled macaroni and rice. Pour over it White, Brown, or Tomato Sauce, cover with buttered cracker crumbs, and bake in a hot oven until the crumbs are brown.

Chicken Hollandaise

1½ tb butter
1 tp finely chopped onion
2 tb cornstarch
1 c chicken stock
1 tp lemon juice
½ c finely chopped celery
¼ tp salt
a few grains of paprika
1 c cold cooked chicken, diced
1 egg yolk

Cook the butter and onion five minutes, add the cornstarch and stock gradually. Add the lemon juice, celery, salt, paprika, and chicken; when well heated, add the yolk of egg slightly beaten, and cook one minute. Serve with buttered Graham toast.

Scalloped Turkey

1 c chicken stock
a few grains of pepper
2 tb flour
1½ c cold roast turkey, diced

Place the bones and skin of a roast turkey in a stewpan and cook in water. When done, there should be a cup of stock. Combine this with the butter, flour, and seasonings. Butter a baking-dish. Cover the bot-

tom with seasoned bread or cracker crumbs, add the turkey meat, then the sauce, and cover the whole with buttered cracker crumbs. Bake in a hot oven till brown. Chicken, turkey, or veal may be used separately or in combination.

Minced Turkey

Make a sauce as for Scalloped Turkey. Cut the turkey very fine, add one-third cup soft, stale bread crumbs. Season with salt, pepper, and onion juice. Serve on small pieces of toast, garnish with poached eggs and toast points.

FLAKY PASTES

Lesson XXXVII

Chicken Patties

Paste for the Patties

Materials used:

1 c butter 2 c flour ¼ tp salt water ice

Utensils needed:

Mixing bowl wooden spoon
breadboard rolling pin
cutter brown paper, baking sheet, or pan

Operations:

To wash the butter:

1. Scald the bowl and the wooden spoon in hot water several minutes.
2. Soak the bowl and spoon in cold water several minutes.
3. Pour out the water, lay the butter in the bowl, pour cold water over it or let water from the faucet run over it. Wash the butter back and forth till it is soft and waxy.
4. Remove it from the water and pat it until it is free from water. Shape it into a flat, square cake.

To make the paste:

1. Unless the room is cool, chill the butter on ice.
2. Sift the flour and salt together, reserving two tb flour for the board.
3. Place the flour in the bowl. Mix it into a dough by adding water. Do not use too much.
4. Place the dough on the board and knead it until it is smooth and elastic. Flour the board if necessary with the flour reserved for that purpose.

5. Cover it with a cloth and let it stand five minutes.

6. Roll it out in a rectangular shape, keeping the angles square and the sides parallel.

7. Place the butter in the middle of the lower half.

8. Fold the upper half over the butter and gently press down the edges all around.

9. Fold section *a* over the butter. Pat edges together.

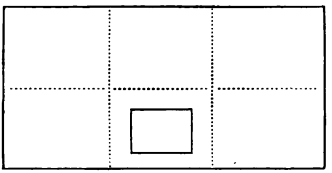

Fig. 57.— Rectangular Shape with Butter in Place

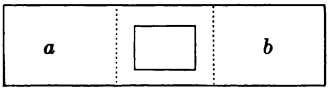

Fig. 58.— The Paste after One Fold

10. Fold section *b* over the butter. Pat edges together.

11. Cover the paste and let it stand five minutes.

12. Turn the paste half-way around.

13. Pat the paste gently with the roller, breaking it into ridges.

14. Roll the paste into a thin strip, always keeping the corners and the edges parallel. Do not let the butter come out.

15. Fold section *a* over *b*, then fold *c* over *a*, making three layers. Press the edges together and turn the paste half-way around, always turning the dough in the same direction.

Rolling the dough into a long strip which is folded into three layers is called "giving it one turn;" do this six times, remembering always to turn the dough half-way round before each rolling. Roll always in the same direction; rolling in opposite directions tends to break the air cells. Why should these not be broken?

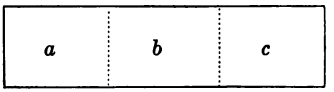

Fig. 59.— Sections for Folding

To make patty shells:

1. Roll the paste to a thickness of $\frac{1}{4}$ inch.

2. Cut it into rounds with a cutter, being careful to flour it before each cutting.

3. Cut little centers from half the rounds; these will be the covers for the patty shells.

4. Brush the edges of the whole rounds with water; lay the rounds from which the centers have been cut upon these and press the edges gently together.

5. Place the shells and the centers upon ice to chill. This will take about thirty minutes.

Baking puff paste:

1. Have the paste very cold and the oven very hot, the greatest heat coming from the bottom.

2. Lay two or three thicknesses of brown paper upon the baking sheet or in the pan and place the patties and centers upon this.

3. Have the oven hot enough for biscuits.

4. Place the pan containing the patties in the oven. The shells should rise to their full height and begin to bake in about 15 minutes.

5. Turn the pan frequently to insure even rising and baking.

6. The shells should be done in twenty-five minutes.

Filling for the Patties

Materials used:

$1\frac{1}{2}$ c cold water — 1 c white sauce — $\frac{1}{8}$ tp celery salt

Utensils needed:

Utensils for making white sauce — sharp knife — cup and bowl

Operations:

1. Make a white sauce, using 2 tb butter, 3 tb flour, 1 c milk, and seasoning to taste.

2. Dice the chicken into uniform pieces.

Fig. 60.—Patties

3. When the white sauce boils, combine the chicken with it. Let the mixture boil.

4. Fill the patty cases. Place the covers upon the cases.

Serving:

These patty cases should have the filling put into them just before they are brought into the dining-room. They should be served on small individual plates. They can be used, when filled with a meat or fish, as the principal dish at a luncheon. When served at the dinner, they should always contain a creamed vegetable. Served at a formal dinner, they should be used as an entrée. What other food have you made which was used in like manner?

Principles:

In what ways is the method of making puff paste different from the method of making plain paste? What is the advantage of using butter instead of lard in making pie crust? Although butter gives a finer flavored crust, lard gives a more tender one. The object of fat in pastry is to make it tender; water always makes it tough. Washing the salt out of butter makes the butter more pliable and easy to handle.

Puff paste is the most delicate and tasty of all the products of pastry cooking. Keeping the ingredients chilled enables the cook to combine them successfully, for cold fats are more easily manipulated than warm fats. What happens to air when it is heated? What is the effect of the expansion of the air within a dough mixture? Therefore when making puff paste, the greater will the expansion of that air be when the paste is put into the oven to cook. Rolling the butter in between the layers, as was done in this crust, entangles the air between the layers, and when this expands, it forces the crust apart into flaky layers, giving it the delicate texture it should have when well made.

Pastry poorly made and of poor materials is never wholesome. Pastry, no matter how well made nor how excellent the materials composing it, should not be eaten every day, because it is not so wholesome nor so easily digested as are our other common foods. But pastry that is well made of good materials may be

eaten by all healthy persons. It affords a very pleasant variety to the diet. The reason why starchy foods surrounded by fat are not wholesome has already been explained.

Cleaning up:

1. What should be done with the flour on the bread board?
2. What is the proper method of caring for the kneading board and rolling pin?

Additional Recipes for Puff Paste

Banbury Tarts

1 c raisins
1 c sugar
juice and grated rind of one lemon
1 egg
1 cracker
puff or plain paste

Stone and chop the raisins, add the sugar, the slightly-beaten egg, the cracker finely rolled, and the lemon juice and rind. Roll the pastry ⅛ inch thick, and cut it into pieces 3½ inches long by 3 inches wide. Put 2 teaspoons of the mixture on each piece and spread slightly. Moisten the edge with cold water halfway around, fold the two halves together, and press the edges closely together, using a three-tined fork dipped in flour. Bake twenty minutes in a slow oven.

Cheese Straws

Roll puff or plain paste ¼ inch thick, sprinkle one-half with grated cheese to which has been added a few grains of salt and cayenne. Fold, press the edges firmly together, fold again, pat, and roll out ¼ inch thick. Sprinkle with cheese and proceed as before; repeat twice. Cut into strips 5 inches long and ¼ inch wide. Bake eight minutes in a hot oven. Parmesan cheese or equal parts of Parmesan and Edam cheese may be used. Cheese straws are piled log-cabin fashion and served with the salad course.

Fig. 61.— Cheese Straws

Orange Sticks

Cut puff or plain paste rolled ⅛ inch thick into strips 5 inches long by 1 inch wide, and bake in a hot oven. Put together in pairs with Orange Filling between.

Orange Filling

½ c sugar
2½ tb flour
grated rind of ½ orange
1 tp butter
¼ c orange juice
½ tb lemon juice
1 egg slightly beaten

Mix the ingredients in the order given. Cook ten minutes in a double boiler, stirring constantly. Cool before spreading.

Tarts

Roll puff paste ⅛ inch thick. Shape with a fluted round cutter, first dipped in flour; remove the centers from half the rounds, leaving rings one-half inch wide. Brush the larger pieces with cold water around the edge; fit the rings upon these and press lightly. Chill thoroughly and bake fifteen minutes in a hot oven. A glazed appearance may be obtained by brushing the tops of the rings with beaten yolk of egg diluted with 1 teaspoonful of water. Cool and fill with jam or jelly.

Lesson XXXVIII

Hunger and Repletion (Reading)

Spartan simplicity of diet:

Hunger has always been strong; repletion weak. The Golden Age was the age of greatest simplicity of manners and food, the greatest physical and moral strength. The Spartans, famous for their strength of body and of character, never had an opportunity to gorge themselves or partake of unwholesome foods, for they ate at a public table to the support of which each man sent regular monthly contributions.

The famous black broth of Lycurgus was the chief food of the Spartan man, but of what it was made is not now known. It was said to be unpalatable and yet it was eaten with a relish because the Spartans were fed so sparingly and exercised so unceasingly that they developed a strong appetite for it. They ate, in addition to this broth, cheese, barley bread, and a very little meat and fish.

Followers of Pythagoras:

The Pythagorean philosophy, which had many devotees in the century after the downfall of Sparta, set forth similar doctrines, its followers being strictly temperate in their eating and drinking. They had community meals at which they met in companies of ten, and they were careful to maintain a calm demeanor and a habit of high thinking and elevated conversation.

Roman gluttony and lavishness:

In sharp contrast was the extravagance of the Romans. The Emperor Claudius seldom dined without at least six hundred guests at table. Julius Cæsar consumed at a single meal, and that often, the revenues of several provinces. Nero's banquets were continuous from midday until midnight, and we read of his friend, the Emperor Vitellius, that he so assiduously cultivated the appetite for food that he was able to eat a thousand oysters at a sitting. Perhaps the most extravagant and gluttonous of all the emperors was Heliogabalus, who once had the heads of six hundred ostriches brought to his table only to eat the brains. He it was who carried the idea of the souvenir, or dinner gift, to a wider excess than ever before. He gave each of his twelve guests animals of the same species as those he had served them to eat; he asked them to carry away with them all the vases and cups of gold, silver, and precious stones out of which they had drunk; and whenever one of them emptied his goblet, he was supplied with a new one to take its place. Each of the twelve was crowned with jewels sparkling among green foliage, and each returned to his home in the final gift, a chariot drawn by oxen. However, these feasts were rare exceptions, even in the highest period of Roman luxury.

The spectre of hunger:

In sharp and pitiable contrast to this repulsive gluttony is the thought of actual hunger, which exists in some measure continuously in all large cities at the present time. One of the

most powerful pictures of hunger ever drawn is that by Charles Dickens, in his *Tale of Two Cities*: "Hunger was pushed out of the tall houses, in the wretched clothing that hung upon poles and lines; hunger was patched into them with straw and rag and wood and paper; hunger was repeated in every fragment of the small modicum of firewood that the man sawed off; hunger stared down from the smokeless chimneys, and started up from the filthy street that had no offal, among its refuse, of anything to eat. Hunger was the inscription on the baker's shelves, written in every small loaf of his scanty stock of bad bread; at the sausage shop; in every dead-dog preparation that was offered for sale! Hunger rattled its dry bones among the roasting chestnuts in the turning cylinder; hunger was shred into atoms in every farthing porringer of husky chips of potato, fried with some reluctant drops of oil."

What wonder that such hunger presaged the great French Revolution or that the novelist saw in this universal Hunger a figure stealing about Paris, assembling the tumbrils for the coming upheaval!

Hunger may be a blessing or it may be a curse. The hunger that anticipates the sure satisfaction of a hearty meal is rather pleasant. But the hunger that does not know when or how it may be satisfied transforms the mildest man into something closely resembling a monster, dangerous to the peace, at least of his immediate environment.

A fact that demands consideration:

Anyone familiar with the world and its foibles knows that a man of affairs is much more approachable just after he has dined than before. Shrewd business men take advantage of this knowledge to further their own interests. Having to consult some elderly or gouty or merely food-loving personage upon a subject involving any possibility of irritation, the shrewd one will invariably select the hour just following luncheon, and if he is wise, will assure himself beforehand that all is well that day with the great man's digestion. All this may sound

like pandering to the god of the stomach, but there is much of truth in the old saying that "the way to a man's heart lies through his stomach." Sydney Smith was not the only great man who loved good eating. He was but one of an army whose name is legion. Even among poets, Shelley stands alone as the one who had to ask his wife whether he had dined.

Feats of eating:

An early countryman of Shelley's, Nicholas Wood, yeoman, ate with ease a whole sheep at one sitting, if we are to believe the solemnly recorded statement. At another meal he ate thirty dozen pigeons.

While yet the philosophy of Pythagoras was in the ascendant, an athlete of ancient Greece ate a four-year-old heifer which he had that day carried alive on his shoulders through the arena. The feat of strength does not seem so unbelievable as the feat of eating, and it may be accepted with the proverbial grain of salt that it is well to keep on hand for such tales.

FISH

Lesson XXXIX

SAUTÉED HALIBUT

Materials used:

Class Rule	Home Rule
A small piece of halibut	desired amount of halibut steaks
salt and pepper	salt and pepper
flour, bread crumbs, or cornmeal	flour, bread crumbs, or cornmeal
fat from pork or any other suitable fat	fat

Utensils needed:

Heavy board	iron spider	plate
sharp knife	spatula	towel

Operations:

1. Trim the halibut steak, if necessary.
2. Wipe the fish dry between the layers of the towel.
3. Place the flour, crumbs, or cornmeal on the plate.
4. Season the fish with salt and pepper.
5. Roll the fish in the flour, crumbs, or cornmeal until all sides are totally covered.
6. Place the fat in the spider and place it over the flame. There should be only enough fat to keep the fish from adhering to the pan.
7. When the fat is smoking hot, place the fish in it.
8. Let it remain in the fat until delicately browned on one side, then turn, using the spatula. Let it brown on the other side.

Serving:

Place the slices of halibut on a platter and garnish with slices of lemon and parsley or cress. A rich white sauce may be made and served with the halibut.

Principles:

What can you say about sautéing as a method of cooking food? What precautions must be taken when food is sautéed? Name some foods that are always cooked by sautéing. Are flesh foods as a rule cooked in this way?

The flesh of domesticated animals should never be cooked by sautéing, for when it is thus prepared it is nearly always rendered somewhat indigestible. Not many fish can be sautéed without danger of the same result, so that only such fish as contain but very little fat should be thus cooked. Such fish usually have a very white flesh, while those that contain but little fat usually have reddish or dark-colored flesh. Not all fish poor in fat can be sautéed. Small fish, as brook trout, may be cooked in this way; and large fish, like halibut, only when it has been cut into small pieces. Why is this?

The term fish includes not only fish proper, but many other forms of water animals, such as oysters, clams, lobsters, shrimps, crawfish, and turtle. Fish is one of the most important substitutes for meat. Since it is a substitute for meat, what food principle must it contain? Name some vegetables used as substitutes for meat.

Protein and fat are the two chief sources of nutrient in fish just as they are in other flesh foods. Hutchinson has divided fish into three classes according to the amount of fat they contain. In the first class he has placed fish containing more than 5 per cent of fat. Examples of such fish are eel, salmon, turbot, and herring. Find these in the table and note the percentage of fat in each. In the second class he has placed fish containing from 2 to 5 per cent of fat. Examples of such fish are halibut and mackerel. In the third class are fish containing less than 2 per cent of fat. Examples of such fish are cod, haddock, and whiting.

Which contains the more water, fat or lean fish? In fish, as in meat, the presence of fat always indicates the presence of a smaller percentage of water, so that a high percentage of fat

COMPOSITIONS OF VARIOUS FISH (From *Farmers' Bulletin*, No. 85)

Kind of Fish	Refuse	Salt	Water	Protein	Fat	Carbo-hydrates	Ash	Total Nutri-ents	Fuel Value per lb. in Ca-lories
Bass, whole	56	.....	34.6	8.5	.9	.....	.5	9.4	172
Bluefish, dressed	48.6	.....	40.3	10.0	.6	.....	.7	11.3	204
Cod, dressed	29.9	.....	58.5	11.1	.2	.....	.8	12.1	209
Cod steaks	9.2	.....	72.4	17.0	.5	.....	1.0	18.5	327
Eel, dressed	20.2	.....	57.2	14.8	7.2	.....	.8	22.8	558
Flounder, common, dressed	56.2	.....	37.0	6.3	.2	.....	.5	7.0	122
Haddock, dressed	51.0	.....	40.0	8.4	.2	.....	.6	9.2	159
Halibut, dressed	17.0	.....	61.9	15.3	4.4	.....	.9	20.6	454
Herring, whole	92.6	.....	41.7	11.2	3.9	.....	.9	15.0	363
Mackerel, dressed	40.7	.....	43.7	11.6	3.5	.....	.7	15.8	353
Perch, white, dressed	54.6	.....	34.4	8.8	1.8	.....	.5	11.1	231
Perch, white, whole	62.5	.....	28.4	7.3	1.5	.....	.4	9.2	195
Pickerel, dressed	35.9	.....	51.2	12.0	.2	.....	.7	12.9	227
Pickerel, whole	47.1	.....	42.2	9.9	.2	.....	.6	10.7	186
Salmon, California	10.3	.....	57.9	16.7	14.8	.....	.9	32.4	903
Salmon, Maine, dres'd	23.8	.....	51.2	15.0	9.5	.....	.9	25.4	658
Shad, whole	50.1	.....	35.2	9.4	4.8	.....	.7	14.9	363
Smelt, whole	41.9	.....	46.1	10.1	1.0	.....	1.0	12.1	222
Sturgeon, dressed	14.4	.....	67.4	15.1	1.0	.....	1.2	17.9	340
Trout, brook, dressed	37.9	.....	48.4	11.9	1.3	.....	.7	13.9	268
Trout, brook, whole	48.1	.....	40.4	9.9	1.1	.....	.6	11.6	222
Trout, lake, dressed	37.5	.....	44.4	11.0	6.2	.....	.7	17.9	449
Turbot, whole	47.7	.....	37.3	9.7	7.5	.....	.7	15.9	445
White fish, dressed	43.6	.....	39.4	12.8	3.6	.....	.9	17.3	376
White fish, whole	53.5	.....	32.5	10.6	3.0	.....	.7	14.3	313

PRESERVED FISH

Kind of Fish	Refuse	Salt	Water	Protein	Fat	Carbo-hydrates	Ash	Total Nutri-ents	Fuel Value per lb. in Ca-lories
Mackerel (1), salted	19.7	8.3	34.8	13.9	21.2	.....	2.1	37.2	1107
Codfish, boneless, salted, dried	.....	21.5	54.4	26.3	.3	.....	1.7	28.3	490
Herring, salted, smoked, dried	14.4	6.5	19.2	20.5	8.8	.....	.9	30.2	726
Haddock, salted, smoked, dried	32.2	1.4	49.2	15.8	.1	.....	1.0	16.9	290
Halibut, salted, smoked, dried	7.0	12.0	46.0	19.3	14.0	.....	1.9	35.2	916
Sardines, canned	5.0	.....	53.6	23.7	12.1	.....	5.3	41.1	916
Salmon, canned	14.2	.....	56.8	19.5	7.5	.....	2.0	29.0	658

MOLLUSKS, CRUSTACEANS, ETC.

Kind of Fish	Refuse	Salt	Water	Protein	Fat	Carbo-hydrates	Ash	Total Nutrients	Fuel Value per lb. in Calories
Oysters, solids	.....	.....	88.3	6.0	1.3	3.3	1.1	11.7	222
Oysters in shell	81.4	.....	16.1	1.2	.2	.7	.4	2.5	91
Oysters, canned	.....	.....	83.4	8.8	2.4	3.9	1.5	16.6	327
Lobster, in shell	61.7	.....	30.7	5.9	.7	.2	.8	7.6	141
Lobster, canned	.....	.....	77.8	18.1	1.1	.5	2.5	22.2	381
Crabs, in shell	52.4	.....	36.7	7.9	.9	.6	1.5	10.9	191
Crabs, canned	.....	.....	80.0	15.8	1.5	.7	2.0	20.0	358
Shrimp, canned	.....	.....	70.8	25.4	1.0	.2	2.6	29.2	503
Frogs' Legs	32.0	.....	56.9	10.5	.1	.....	.7	11.3	195

always accompanies a low percentage of water. Presence of fat in fish is therefore a clear gain in nutritive value, just as it is in meat. But all fish as a whole contains relatively higher per cents of water than does meat.

Any part of an article of diet that cannot be used as food is termed refuse. Fish contains a relatively larger per cent of refuse than does meat. Before the fish is prepared for the table this refuse may be as much as 60 per cent of the weight of the fish, and after it has been prepared for the table from 35 to 50 per cent of the weight may be refuse. How does this high proportion of refuse affect the economic value of fish in the diet?

Cleaning up:

1. Place all refuse in the garbage can.
2. Use hot, soapy water in cleaning greasy dishes.
3. Place the pieces of sautéed halibut remaining on a suitable platter and set in cool place.

Lesson XL

BOILED HALIBUT

Materials used:

A thick slice of halibut	a little parsley	salt
a few potatoes	butter or other fat	¼ c vinegar

Utensils needed:

Kettle
granite pan
piece of cheesecloth
frying pan
French potato cutter
knives, forks, and spoons

Fig. 62.— French Potato-cutter

Operations:

1. Put water to which has been added ¼ c vinegar into the kettle and let it heat, but not boil.
2. Tie the fish securely in cheesecloth.
3. When the water is hot, lower the fish into it, bring the water to the boiling point, and then let the fish simmer about twenty-five minutes.
4. Wash and pare the potatoes.
5. With the cutter remove as many round balls from them as possible. Use the remainder of the potato for mashed potato.
6. Cook the balls in boiling salted water ten minutes; drain.
7. Place a little butter or other fat suitable for sautéing in a frying pan; let the fat melt.
8. Add the balls, place the pan in the oven, and let it remain there until the potatoes are done. Shake the pan frequently that the potatoes may brown evenly. Sprinkle the potatoes with a little salt.
9. Chop a little parsley very fine.
10. When the balls are thoroughly cooked, add a little fresh butter and the chopped parsley, and toss the potatoes about until they are evenly coated with parsley. Use these as a garnish for the fish and serve at once.
11. When the fish is done, remove from the kettle, take it from the cloth, and remove the skin and bone.
12. Arrange a folded napkin upon a platter, place the fish upon it, garnish with parsley and potato balls, and serve with drawn butter sauce.

Drawn Butter Sauce

Materials used:

⅓ c butter	½ tp salt
3 tb flour	a few grains of pepper
1½ c water	

Utensils needed:

Granite pan	wooden spoon
measuring utensils	

Operations:

1. Mix the flour, salt, and pepper.
2. Place one-half the butter in the pan and let it melt.
3. Add the flour and water just as in making White Sauce.
4. Let the sauce boil, then add the remainder of the butter, little by little, until all has been added. Stir until all is absorbed.

Serving:

Fish, like other flesh foods, is served for the principal course at home dinners. It is served hot. The baked or boiled fish should be laid upon the platter, the back of the fish away from the person who is carving and serving.

In carving fish, a silver knife and fork should always be used, for steel utensils are apt to give a disagreeable flavor to those portions of the fish with which they come in contact. If the backbone is of such a nature that it can be cut through with the knife, the slices may be cut through the entire thickness of the fish; if the backbone is too resistant, cut thick slices down to it, serving these slices to the guests. When one-half the fish has thus been served, remove the backbone and continue serving the remainder of the fish. If there is a dressing in the fish, serve a little of it with each slice.

There are many garnishes besides those used today which may be used with fish. Some of these are cucumbers, cress, radishes, tomatoes, and lemons. Any of the vegetables mentioned when made into a salad are suitable to use with fish. When used in salads, they should be served on lettuce leaves on

salad plates. Like meat, fish is always served with potatoes in some form. Macaroni and cheese is also a suitable dish to serve with fish. Sauces suitable to serve with boiled fish are Hollandaise, Bechamel, or Drawn Butter Sauce. (See pages 178, 179.)

Principles:

Not all fish is acceptable when prepared by boiling, just as not all fish is suitable for frying or sautéing. What kinds of fish may be fried or sautéed? In general, those fish which are not suitable for frying or sautéing should be cooked by the other methods. But white varieties, which are considered best when fried, are often cooked by boiling. When they are thus prepared, they should be served with some kind of rich sauce.

Boiling is neither the best nor the most economical method of cooking fish, but fish is often prepared in this way because of the variety afforded to the diet. Fish has less of the extractives than has meat. These extractives are readily dissolved by the water in which the fish is cooked, much of the nutritive material of the fish being thus lost. Scientists have experimented with boiled fish to determine how much it loses in boiling. They have found a loss ranging from 5 to 30 per cent. Most of this loss is made up of water and this is the reason why boiled fish has such a dry taste. The next most important loss is in the extractives; the losses in fats and proteins are small and insignificant.

Vinegar is added to the water in which eggs are poached and it should always be added to water in which fish is to be cooked in the proportion of $\frac{1}{2}$ c vinegar to 2 c water. It hardens the albumin, thus preventing its escape into the water and the breaking to pieces of the fish. Tying up the fish in the cloth helps to keep it in shape; whenever only a piece out of the whole of the fish is cooked, the cloth seems to help to keep the flesh of the fish white.

After one has learned the nutrients which a food contains, one naturally wonders how easily and how thoroughly these

food principles may be prepared by the digestive organs for the use of the tissues of the body. Fortunately scientists have been able to determine with quite a degree of accuracy just how digestible fish food is.

In order to know the digestibility of a food two factors must be considered: The rapidity of digestion and the thoroughness of digestion.

Many experiments have been conducted to determine both these factors. The results of these experiments show that, as a rule, fish is more rapidly digested than meat, and fish and lean beef are about equally digestible. About 97 per cent of the protein and over 90 per cent of the fat of both are retained for use by the tissues of the body. But not all fish are alike in this respect. Salt fish is less thoroughly digested than fresh; fish containing but little fat in the muscular tissues is more readily and easily digested than fish containing a relatively high proportion. Is there any similarity in fish and other flesh foods in this respect?

Cleaning up:

1. How should greasy dishes be washed?
2. What should be done with the cloth in which the fish was tied?

Lesson XLI

A Boned Fish Baked

Materials used:

A fish of medium size
½ c cracker crumbs
½ c stale bread crumbs
¼ c melted butter
a few drops of onion juice
¼ c hot water
salt and pepper

Utensils needed:

Sharp, pointed knife
dull knife
baking sheet
utensils for measuring
utensils for mixing ingredients for stuffing

Operations:

NOTE TO TEACHER: Sometimes it is desired to skin the fish before baking it. For this reason the directions for skinning the fish are given here.

1. Cut off the fins.
2. Cut off a narrow strip of skin the full length of the back.
3. Cut the skin around the head and gills.
4. Beginning at the head end, work the skin loose at the gills. In a fresh fish the skin will strip off very readily; if the skin does not come off readily, work slowly that the flesh may not be torn off with it.
5. Take the skin off the other side in the same way. If the fingers are dipped in a little salt, they will be less likely to slip in removing the skin.
6. Remove the head and tail.

To bone the fish:

1. Lay the fish on its back on a board.
2. Take a dull knife or use the back of the sharp knife. Beginning at the head end, carefully scrape the meat off the ribs down to the backbone. Do this on one side.
3. Turn the fish and free the ribs on the other side. See to it that no meat is left on the bones.
4. Cut or scrape the backbone free from the meat. Wipe the fish dry and season well on the inside.
5. Fill the fish with dressing.

STUFFING FOR FISH

½ c cracker crumbs	¼ tp salt
½ c stale bread crumbs	⅛ tp pepper
¼ c melted butter	a few drops of onion juice

6. After the fish is filled, skewer the sides together.
7. Place the fish in a rack on a baking sheet; lay two or three pieces of bacon on its side.
8. Place in a very hot oven. The fish should be baked in about thirty-five minutes.

Serving:

What are some garnishes that may be used on fish? What is the value of garnishes? What is the advantage to the carver of having all bones removed? How should this fish be cut for serving? At what meals is a fish prepared in this way suitable for serving? What sauces may be served with fish?

Principles:

What nutritive material is added to the fish in the dressing and the sauce? What food principles are lacking in fish? When fish is served with dressing and sauce, is it a composite dish?

What is the chief nutritive constituent of fish? The chief value of fish in the diet is the protein it provides. Another advantage of using fish in the diet is to give variety. This is being demanded more and more as facilities for transportation are improved and civilization advances. In almost every locality some form of fresh fish may be secured, usually at a price that makes the fish an economical substitute for meat.

Besides containing nitrogen compounds, fish also contains considerable quantities of mineral matter. One of these mineral substances is phosphorus. Phosphorus is also one of the chief mineral constituents of the brain. When these two facts became known, it was immediately assumed that fish was an excellent brain food and should be served to brain workers. Scientific investigations since then have entirely disproved this theory. Fish nourishes the brain only in the same way that meat, eggs, or other protein foods nourish the brain.

While fish cannot be said to be especially a food for the brain, experience has shown that it is particularly good for persons of sedentary habits or occupations. This is probably because it is less hearty or stimulating than the flesh foods.

If fish has an odor when fried, it is not fresh. A fresh fish has flesh so firm that when it is touched with the finger no dent appears; the eyes of a fresh fish are bright, not dull and lusterless; the gills have a bright red color when the fish is fresh,

and there is no blubber showing. Fish may also be tested for freshness by laying it in water. If the fish sinks, it is fresh; if it floats, it is unfit for use.

There are several possible dangers from eating fish that is not strictly fresh. The most serious of these is perhaps poisoning from ptomaines. Ptomaines are poisonous bodies which have been produced by the action of micro-organisms. Why are bacteria especially likely to be active on flesh and fish foods? Ptomaines are caused by the action of certain bacteria which feed only on protein matter. The presence of ptomaines in a food always indicates that decomposition processes have set in. When any food containing ptomaines is eaten by man, serious disturbances and a diseased condition are caused, known as ptomaine poisoning. This often proves fatal. Fish that has been frozen for some time and is then thawed out and kept some time before it is used is especially likely to contain these injurious bodies.

Canned fish, like other canned goods, should be taken out as soon as the can has been opened. Why is it dangerous to allow such food to be exposed to the air in the tin can? Such danger is peculiar to all canned food, and canned fish seems to be peculiarly suited for the growth of bacteria and other organisms producing decay.

Cleaning up:

Clean all utensils as directed in the preceding lessons.

Lesson XLII

Fish à la Creme

Materials used:

A quantity of cold mashed potatoes
a quantity of any cold cooked fish
white sauce No. 2 (see Book One, Lesson VIII) in amount equal to the fish
½ c cracker crumbs
¼ c butter
yolk of one egg

Utensils needed:

A dish suitable for serving that will bear the heat of the oven
utensils for boiling and mashing potatoes
utensils in which to make the sauce
brush pan

Operations:

1. Wash, pare, boil, mash, and beat the potato very light.
2. Flake the fish.
3. Make the sauce, using all milk, all fish stock, or half milk and half stock.
4. Place the mashed potato upon the serving dish and shape into either a round or an oval form. Ornament the top of the wall with little balls of potato or leave plain, as desired.
5. Beat the egg yolk lightly. Brush the yolk lightly over the potato, inside and out.
6. Place a layer of fish inside the form, then a layer of sauce, continuing alternately until all has been used.
7. Butter the crumbs, then sprinkle these over the top of the fish and sauce.
8. Set the dish in the oven until the fish and potato are delicately browned.

Serving:

This dish makes an excellent luncheon dish; it may also be used for a small home dinner. What foods are suitable to serve with it for lunch? It may also be used as the chief course at dinner.

Principles:

In what way have you prepared fish for the table? In general, fish may be prepared for the table in the same manner that meat is prepared, that is, fish may be boiled, steamed, broiled, fried, baked, or sautéed. What fish are suitable for frying or sautéing? for boiling? What is the objection to boiling fish? How might this objection be overcome and the fish yet be cooked in approximately the same way as in boiling? Oily varieties of fish are best for broiling, for in broiling it is impossible to prevent

the escape of some of the juices and a dry fish must be cooked in a way that will not permit of the loss of any of its juices. Fish should be egged and crumbed for frying.

Cleaning up:

1. Place potato parings, bones, and any other refuse in the garbage can.
2. Care for the utensils properly, taking care to leave them in a bright, dry condition.

What has been learned:

1. A method of preparing left-over fish.
2. Different methods of cooking fish. Any oily fish that has a thin flat appearance after it has been dressed, or that may be cut in slices may be broiled. Examples of such fish are mackerel, bass, halibut, and salmon.

Lesson XLIII

Oyster Stew

Materials used:

Class Rule	Home Rule
6 oysters	1 pt oysters
½ c scalded milk	1 qt scalded milk
1 tp butter	3 tb butter
⅓ tp salt	½ tb salt
a few grains of pepper	⅛ tp pepper
crackers	crackers

Utensils needed:

a double boiler	a wire strainer placed over a bowl
spoons and any other utensils found necessary	cheesecloth

Operations:

1. Place the milk over the fire to scald.
2. Drain the liquor off the oysters into the bowl.
3. Examine the oysters separately to make sure they have no bits of shell adhering to them.

4. Heat the liquor to the boiling point, then strain it through two thicknesses of cheesecloth.

5. Add the salt, pepper, and oyster liquor to the scalded milk. Heat to the boiling point, then reduce heat slightly.

6. Add the oysters and cook them at this temperature until the edges begin to curl.

7. Add the butter and serve.

Serving:

Oyster stew makes an excellent luncheon dish. Because of the large amount of nutrients this dish contains, it is not suitable for serving at the beginning of a heavy meal. Serve oyster stew with a plate of crisped crackers.

Principles:

Oysters belong to a class of fresh water marine animals known as mollusks, or shell fish. Other representatives of this class used as food are clams. Can you think of any others?

Turn to the table showing the composition of fish. What is the composition of oysters? How do they compare with beef in composition? with milk? One authority has stated that fourteen oysters contain the same amount of nourishment as one egg. It takes two hundred twenty-three to furnish the same amount of nourishment as does one pound of beef, and it takes a quart of oysters to furnish as much nutrient as does a quart of milk. What is the price of a quart of milk? of a quart of oysters? Can oysters, then, be considered an economical source of proteins? What is their chief function in the diet?

Oysters and the other shellfish used as food are very much like meat and fish in composition, but with one difference. Meat and fish do not contain any carbohydrates, but the shellfish do. Oysters are especially rich in this food principle and because of it are more nearly like milk than any of the other animal foods.

The cheapness of a food and its composition are not the only means of determining its dietetic value. The ease and the toughness of its digestion must also be taken into account.

In this respect oysters are much better than many of our more common foods, for they are among the most easily and thoroughly digested of all foods. They are liked by almost everyone, and they seem to agree with all. For this reason, they are especially valuable in furnishing a variety to our diet and are also especially valuable as food for invalids.

When oysters are prepared with milk, what way is the nutritive value of the dish enhanced? What precautions are necessary in heating milk? State the reasons why these precautions must always be taken. The protein of oysters is a very tender and delicate compound and the same care should be exercised in cooking the oysters that is used in cooking eggs. It is for this reason that the temperature of the milk is lowered slightly just before the oysters are added and that care is taken not to let the oysters remain in the milk too long before serving.

Cleaning up:

How should dishes in which milk has been cooked be cared for?

Lesson XLIV

Additional Recipes for Fish

Broiled Halibut or Other Sliced Fish

Slices of fish
a small piece of fat salt pork
a little melted butter and butter brush

Heat the broiler and rub the wires with the pieces of salt pork. Lay the fish upon the broiler and set it in place. The flesh side should be towards the heat; most of the cooking must be done from this side because the skin side burns so readily. After a few minutes' exposure to intense heat, the broiler may be drawn away from the fire. Turn the broiler every once in a while that the fish may cook on both sides. Whenever the flesh side is turned uppermost, brush it over with butter. A piece of halibut should cook in about fifteen minutes and it should be turned every three or four minutes or so. When done,

remove the fish from the broiler and place it skin side down upon a platter. Spread with maitre d'hotel butter (see page 178), and serve at once.

Planked White Fish

Heat a short piece of heavy oak or other hard wood plank. Clean the fish well and split it down the back. Lay the fish upon the center of the plank, brush it with melted butter and sprinkle with salt and pepper. Bake twenty-five minutes in a hot oven, basting frequently with melted butter. The fish,

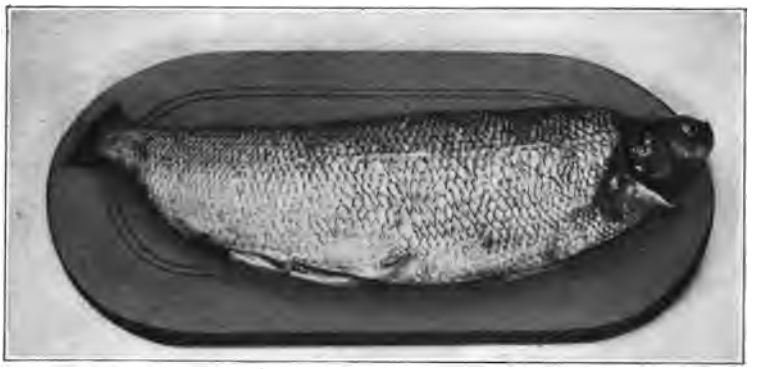

Fig. 63.— Planked Fish

when cooked, is served upon the plank upon which it was baked. The plank should be placed upon a large serving dish. Its edges should be concealed by branches of parsley and radishes cut to resemble lilies. That portion of the plank which extends beyond the fish should be filled with duchess potato, which is put in place by means of a pastry bag and tube.

Duchess Potatoes

1 pt hot riced potatoes
2 tb butter
salt
3 yolks, beaten

Enough hot milk or cream to make the mixture so soft that it will pass through a pastry tube. Mix all these ingredients and

beat thoroughly. Shape as desired. Brush over with a beaten yolk of egg diluted with a little milk, and brown in the oven.

Baked Halibut with Tomato Sauce

2c tomatoes	3 cloves	3 tb flour
2 lb halibut	½ tb sugar	¾ tp salt
1 c water	3 tb. butter	⅛ tp pepper
1 slice onion		

Cook the tomatoes, water, onion, cloves, and sugar twenty minutes. Make a paste of the flour and butter and stir it into the mixture. Add the salt and pepper and let it boil ten minutes longer, then strain through the sieve. Put the cleaned fish into a suitable baking pan, pour half the sauce around it and bake thirty-five minutes. Baste often. When ready to serve, place the fish upon a hot platter, pour the remaining sauce around it, garnish with parsley and serve.

Dishes Made from Left-Overs of Fish

Turban of Fish

2½ c cold flaked fish	¼ c butter
1½ c milk	¼ c flour
1 slice of onion	½ tp salt
1 blade of mace	⅛ tp pepper
sprig of parsley	a little lemon juice
⅔ c buttered cracker crumbs	yolks of 2 eggs

Scald the milk with onion, mace, and parsley, then remove the seasonings. Mix the flour, salt, and pepper. Melt the butter, add the flour mixture and the milk gradually. Beat the yolks of the eggs slightly and add them to the milk last of all. Put a layer of fish in a buttered baking dish, sprinkle with salt and pepper, and add a few drops of lemon juice. Cover with the sauce. Continue until all the fish and sauce has been used. Cover with crumbs and bake in a hot oven until the crumbs are brown.

food principles may be prepared by the digestive organs for the use of the tissues of the body. Fortunately scientists have been able to determine with quite a degree of accuracy just how digestible fish food is.

In order to know the digestibility of a food two factors must be considered: The rapidity of digestion and the thoroughness of digestion.

Many experiments have been conducted to determine both these factors. The results of these experiments show that, as a rule, fish is more rapidly digested than meat, and fish and lean beef are about equally digestible. About 97 per cent of the protein and over 90 per cent of the fat of both are retained for use by the tissues of the body. But not all fish are alike in this respect. Salt fish is less thoroughly digested than fresh; fish containing but little fat in the muscular tissues is more readily and easily digested than fish containing a relatively high proportion. Is there any similarity in fish and other flesh foods in this respect?

Cleaning up:

1. How should greasy dishes be washed?
2. What should be done with the cloth in which the fish was tied?

Lesson XLI

A Boned Fish Baked

Materials used:

A fish of medium size	a few drops of onion juice
½ c cracker crumbs	¼ c hot water
½ c stale bread crumbs	salt and pepper
¼ c melted butter	

Utensils needed:

Sharp, pointed knife	dull knife
baking sheet	utensils for measuring

utensils for mixing ingredients for stuffing

Operations:

NOTE TO TEACHER: Sometimes it is desired to skin the fish before baking it. For this reason the directions for skinning the fish are given here.

1. Cut off the fins.
2. Cut off a narrow strip of skin the full length of the back.
3. Cut the skin around the head and gills.
4. Beginning at the head end, work the skin loose at the gills. In a fresh fish the skin will strip off very readily; if the skin does not come off readily, work slowly that the flesh may not be torn off with it.
5. Take the skin off the other side in the same way. If the fingers are dipped in a little salt, they will be less likely to slip in removing the skin.
6. Remove the head and tail.

To bone the fish:

1. Lay the fish on its back on a board.
2. Take a dull knife or use the back of the sharp knife. Beginning at the head end, carefully scrape the meat off the ribs down to the backbone. Do this on one side.
3. Turn the fish and free the ribs on the other side. See to it that no meat is left on the bones.
4. Cut or scrape the backbone free from the meat. Wipe the fish dry and season well on the inside.
5. Fill the fish with dressing.

STUFFING FOR FISH

½ c cracker crumbs	¼ tp salt
½ c stale bread crumbs	⅛ tp pepper
¼ c melted butter	a few drops of onion juice

6. After the fish is filled, skewer the sides together.
7. Place the fish in a rack on a baking sheet; lay two or three pieces of bacon on its side.
8. Place in a very hot oven. The fish should be baked in about thirty-five minutes.

food principles may be prepared by the digestive organs for the use of the tissues of the body. Fortunately scientists have been able to determine with quite a degree of accuracy just how digestible fish food is.

In order to know the digestibility of a food two factors must be considered: The rapidity of digestion and the thoroughness of digestion.

Many experiments have been conducted to determine both these factors. The results of these experiments show that, as a rule, fish is more rapidly digested than meat, and fish and lean beef are about equally digestible. About 97 per cent of the protein and over 90 per cent of the fat of both are retained for use by the tissues of the body. But not all fish are alike in this respect. Salt fish is less thoroughly digested than fresh; fish containing but little fat in the muscular tissues is more readily and easily digested than fish containing a relatively high proportion. Is there any similarity in fish and other flesh foods in this respect?

Cleaning up:

1. How should greasy dishes be washed?
2. What should be done with the cloth in which the fish was tied?

Lesson XLI

A Boned Fish Baked

Materials used:

A fish of medium size
½ c cracker crumbs
½ c stale bread crumbs
¼ c melted butter
a few drops of onion juice
¼ c hot water
salt and pepper

Utensils needed:

Sharp, pointed knife
dull knife
baking sheet
utensils for measuring
utensils for mixing ingredients for stuffing

Operations:

NOTE TO TEACHER: Sometimes it is desired to skin the fish before baking it. For this reason the directions for skinning the fish are given here.

1. Cut off the fins.
2. Cut off a narrow strip of skin the full length of the back.
3. Cut the skin around the head and gills.
4. Beginning at the head end, work the skin loose at the gills. In a fresh fish the skin will strip off very readily; if the skin does not come off readily, work slowly that the flesh may not be torn off with it.
5. Take the skin off the other side in the same way. If the fingers are dipped in a little salt, they will be less likely to slip in removing the skin.
6. Remove the head and tail.

To bone the fish:

1. Lay the fish on its back on a board.
2. Take a dull knife or use the back of the sharp knife. Beginning at the head end, carefully scrape the meat off the ribs down to the backbone. Do this on one side.
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STUFFING FOR FISH

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Cleaning up:

1. How should greasy dishes be washed?
2. What should be done with the cloth in which the fish was tied?

Lesson XLI

A Boned Fish Baked

Materials used:

A fish of medium size
½ c cracker crumbs
½ c stale bread crumbs
¼ c melted butter
a few drops of onion juice
¼ c hot water
salt and pepper

Utensils needed:

Sharp, pointed knife
dull knife
baking sheet
utensils for measuring
utensils for mixing ingredients for stuffing

Operations:

NOTE TO TEACHER: Sometimes it is desired to skin the fish before baking it. For this reason the directions for skinning the fish are given here.

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7. Place the fish in a rack on a baking sheet; lay two or three pieces of bacon on its side.
8. Place in a very hot oven. The fish should be baked in about thirty-five minutes.

ICES

Lesson XLVI

PHILADELPHIA ICE CREAM

Materials used:

Class Rule	Home Rule
1 c cream	1 qt thin cream
¼ c sugar	1 c sugar or 1½ c sirup
½ c milk	1 tb vanilla
1 tp vanilla	bananas sliced
1 banana sliced (if desired)	

ice and rock salt

Fig. 65.

Utensils needed:

Small freezer	double boiler
measuring utensils	gunny sack or canvas bag
mallet	saucer

Operations:

1. Place a piece of ice in the sack (or bag), place the sack on a stone or door step or anything hard, and with the mallet pound it till it is finely crushed.

2. Scald the ice cream can and dasher, place them in position, being careful that all parts fit.

3. Scald the cream and milk. The proper temperature is indicated by little bubbles appearing around the edge of the boiler.

4. Add the sugar, stirring until it is dissolved.

5. Cool the liquid mixture.

6. Add the vanilla.

7. Turn the mixture into the can. Fill it only two-thirds full, as the cream swells when being frozen.

8. Put the cover in position. Adjust the crank. Turn it a couple of times to make certain that it fits.

9. Using the saucer to measure, fill the space between the can and the freezer with layers of ice and salt, using three times as much ice as salt.

10. Pack the ice and salt with a stick or something similar until the packing comes a little above the cream in the can.

11. Begin to turn the crank, slowly at first and increasing the rate of speed as the mixture begins to stiffen. If bananas are used, slice them and add them at this time.

12. Add more ice and salt as necessary, and as soon as the ice begins to float, remove the cork and draw off the water.

13. When the mixture has thickened so that it is difficult to turn the crank, wipe off the cover and top of the can well to prevent salt water from accidentally getting into the ice cream.

14. Raise the crank, remove the cover, and lift out the dasher, scraping this off.

15. Scrape the ice cream from the sides of the can and beat the mixture till it is smooth.

Principles:

Salt has a great affinity for water, hence when the ice and salt are packed together tightly, the salt causes the ice to melt and

the water resulting dissolves the salt. To change a substance from a solid to a liquid form, a great amount of heat is required. In the making of ice cream the heat required to change the ice and salt to a solution is absorbed from the liquid in the can, which will consequently sink to a temperature below the freezing-point.

The texture of the ice cream depends upon the proportion of salt to ice. Three parts of ice to one of salt makes a smooth-grained, velvety cream, while 1 : 1 makes a granular cream.

The greater the proportion of salt, the quicker the mixture will freeze, but too high a proportion causes the cream to be coarse-grained. The finer the ice is crushed, the more quickly the mixture will freeze.

The cream increases in volume as it freezes because air is incorporated in it. Under the right conditions the volume of the mixture may even increase till the bulk is doubled. Eighty per cent of the original mixture should be the maximum increase and 50 per cent the minimum. The mixture begins to increase in volume when the temperature has dropped to 34 degrees. The increase takes place very slowly, while the walls of the "cases" of cream become hard. At the temperature of 28 degrees, the maximum increase is reached. Cream should not be beaten too long or the little cases will become brittle, the walls will break, and the mixture will go back to its original volume. For a similar reason the mixture will not have enough air incorporated in it. The greater the increase, the longer it will take the ice cream to melt.

When cream is used, it should not be too rich. Fat up to a certain limit gives greater firmness and greater food value; beyond this limit it kills the ice cream, that is, it prevents the increase in volume. Twenty-five per cent of fat is as rich as it need be. For this reason the cream may be diluted with milk. The cream should be kept cold for 24 hours before using. It is well to keep it on ice. Scalding the cream prevents its curdling and gives the ice cream a velvety texture. If the cream

is not scalded, the increase will be greater, but the finished product will have a raw taste.

The cream must be sweetened and flavored very highly, as during the freezing process some sweetening and flavoring are lost.

Fruit is very often combined with this ice cream; strawberries, peaches, etc., may be mashed, sweetened, passed through a ricer, and then allowed to stand an hour or so before being added to the ice cream, which has been partly frozen. If the fruit is not tart enough, the addition of the juice of one lemon will bring out the flavor. As a general thing, fruit should be added after the mixture is partly frozen, or the acid in the fruit will tend to curdle the milk and cream.

Allowing the ice cream to stand an hour or so after being frozen also brings out a richer flavor than would otherwise exist.

Cleaning up:

After using the freezer, wash and scald the can, cover and dasher, thoroughly drying before putting away.

Drain the salt left in the freezer, dry it, and put it away for future use in making ice cream.

Wipe off the crank and bearings well, being careful not to let water touch the gearing.

Scald the freezer inside and out, dry it thoroughly, and set it away.

How to freeze ice cream without a freezer:

If a freezer is not available, a tin pail with a cover will answer the purpose very well if set within a wooden pail. Whirl the tin pail by the handle, occasionally taking off the cover to scrape the cream down from the sides and beat the cream.

Lesson XLVII

Neapolitan Ice

Materials used:

Class Rule	Home Rule
½ c cream and	2 c milk
½ c milk, or	2 c cream or 1 qt rich milk
1 c rich milk	6 to 12 yolks of eggs
¼ c and 2 tb sugar	1½ to 2 c sugar
1 tp vanilla	2 tb vanilla
2 egg yolks	1½ c water
¾ c water	

ice and rock salt

Utensils needed:

Ice cream freezer	gunny sack or canvas bag
mallet	saucer
double boiler	measuring utensils

Operations:

1. Beat the egg yolks till they are thick and lemon-colored.
2. Make a sirup of ¼ c sugar and 2 tb water. If possible, use a sirup gauge when making the sirup.
3. Put the water and sugar on to boil. Test by placing a little in a test tube and putting in the gauge. When the gauge floats at 28°, the proper degree of density has been reached.
4. Add the sirup to the egg and beat.
5. Turn the cream and milk into the double boiler, add the egg and sirup mixture to this.
6. Cook as a custard would be cooked. See Book One, Lesson XXXVI.
7. Strain the mixture into a dish.
8. Place in a utensil containing cold water.
9. When cool, add the flavoring and turn the liquid into the freezer. How should the freezer have been previously treated?

10. Pack with ice and salt. How? What proportions should be used? How is the ice cream tested? What is done to it when it is stiff enough?

Serving:

Ice cream is served in glass sherbet cups or on small plates. It is often served in halves of fruit.

Principles:

Cooked ice cream has a very different flavor from uncooked ice cream. It is also smoother and richer and less cream is needed in its making. The flavor of ice cream depends upon several things. A rich cream has a better flavor than a thin cream. Contamination from barn and dairy as well as from dirty utensils manifests itself in flavor. (Cream used in the making of ice cream should not be too acid, 16% to 18% of acidity being best. Cream almost sour enough to churn may be used if mixed with from five to ten times its volume of sweet cream.)

Fig. 66.— Ice Cream in Fruit

Sugar helps to preserve and sweeten. It also increases the volume.

The addition of a little salt has been found by experiment to deepen and enrich the flavor. Great care must be taken in adding it not to use too much, one-half tp to a gallon being a good proportion.

As explained in Lesson XIX, Book Two, cream is ripened by the growth of lactic acid bacteria. Ice cream is at its best when it has stood from 12 to 24 hours. In the process of ripening, all the flavors of the several ingredients, which

can be easily distinguished when cream is freshly made, are blended together.

The texture of the ice cream depends upon several things. The richer the milk fat from which it is made, the smoother the ice cream. The manner of freezing the cream is one of the greatest influencing factors. If frozen too rapidly, it will be full of water crystals, while if frozen more slowly, it will be of a smoother consistency. The latter result is effected by the incorporation of air during the beating, for if frozen without stirring ice cream will be coarse even if thick cream be used. With an increase of 33% to 44%, the texture is very velvety, and the product is palatable and rich. Fresh cream produces a coarser-grained ice cream than cream which has been kept for 24 hours.

The increased volume of ice cream depends upon several things. A cream is said to be viscous. Viscosity depends upon a thickening in cream similar to clotting in blood. This thickening increases as the cream ripens.

By far the greatest influencing factor is the rate of freezing. Before a cream will whip well, it has to be of a certain temperature. The mixture of milk, eggs, and cream is at first too thin to retain any air whipped into it. At about 34° it will begin to beat up. It will gradually increase in volume till it reaches 29° or 28°, the freezing point. At this point it will remain from four to fifteen minutes, depending upon the rate of freezing. This stationary stage indicates the absorption of heat by the packing of ice and salt. The volume is greatest at the end of this period. When the temperature drops to 27°, the cream stops swelling and becomes brittle. This is the time when the freezing should stop. The moment it freezes, it becomes brittle and does not take up more air, but instead gives up what has been taken in. The cream does not swell when first put into the can unless it be 34° or below. Hence turning the crank rapidly at first does no good and may result in churning the cream into butter. The crank should be turned slowly at first,

then rapidly, and again slowly to prevent the swell from diminishing when the temperature drops from 28° to 27°.

The swell of ice cream is closely connected with the fat of the cream. Skimmilk can be made to increase to double its volume, but will quickly lose its shape. A fluffy ice cream is never desirable, as it will never keep its shape well. A cream containing on the average 22% fat is about right.

Cream should be kept a day at a point close above the freezing point for several reasons: (1) It will keep sweet longer; (2) It will be more viscous; (3) The butter-fat in it will be hardened, giving the product body.

Summary

1. Cooked ice cream has a different flavor and texture from uncooked ice cream. It is really a frozen custard.
2. Flavor depends on:
   (*a*) Richness and thinness of cream
   (*b*) Handling of milk, etc.
   (*c*) Acidity of cream
   (*d*) Addition of salt
   (*e*) Ripening of ice cream
3. Texture depends on:
   (*a*) Amount of fat
   (*b*) Rate of freezing
   (*c*) Proportion of ice to salt
4. Increase in volume depends on:
   (*a*) Viscosity of cream
   (*b*) Rate of freezing
   (*c*) Fat content
   (*d*) Condition of cream

Lesson XLVIII

Cornstarch Ice Cream

Materials used:

Class Rule	Home Rule
½ c milk	2 c milk
¼ c sugar	1 c sugar
¼ tb cornstarch	1 tb cornstarch
½ c thin cream	2 c thin cream
1 egg yolk	3 egg yolks
vanilla	1 tb vanilla

Utensils needed:

Canvas bag	ice cream freezer	measuring utensils
mallet	pan	double boiler

Operations:

1. Crush the ice.
2. Prepare the freezer.
3. Scald the milk.
4. Mix the cornstarch with half the sugar. Add this to the milk, stirring constantly. Why is the cornstarch added to the sugar?
5. Boil 15 minutes, stirring occasionally.
6. Beat the yolks of the eggs. Add these to the sugar and beat the mixture.
7. Mix a little of the hot liquid with it.
8. Pour this over the remaining mixture and beat well.
9. Add the cream.
10. Strain.
11. Cool.
12. Add the flavoring. Why is it added at this point?
13. Freeze.

Principles:

The result desired in an ice cream is a smooth, velvety texture. The richer the milk and cream are, other things being equal, the better the texture of the product. The poorer the milk is in milk-fat the coarser and more spiny is the finished product. When a thin cream is used, wheat, rice flour, or cornstarch is employed to effect a smooth texture. The frozen mixture is more like a pudding, eggs being used either alone or combined with the cream. Gelatin is very often used as a binder in ice cream. It proves the most satisfactory, for it encases the small spiny water-crystals in little envelopes, making the mixture smooth and velvety. Gelatin also enables the ice cream to retain its body and firmness. Due precaution must be taken, however, not to use too much gelatin, as it imparts a peculiar taste to the product. As a binder, wheat flour is to be preferred

to cornstarch or rice flour. Whichever binder is used, it should be thoroughly cooked before being added to the cream. What is the result if they are not well cooked? This is shown by rough granules throughout the mixture. If too much of any binder is used, the ice cream becomes soggy and the "swell" is diminished.

The use of eggs as a filler is not common in any but the richer and more expensive creams. Raw eggs do not have any effect on the volume, but when the egg mixture is cooked, both a greater volume and a greater smoothness are obtained. What dish does the resulting mixture resemble?

Rennet is sometimes used as a filler for a lean, or thin cream. The rennet, or junket tablet is added to the lukewarm milk. What is the effect? This ice cream will have a firmer and smoother texture than would otherwise be the case. The ice cream powders on the market have rennet as their active principle.

Cleaning up:

In freezing ice creams, care should be taken not to allow brine to come onto the clothing. Why? What should be done to the salt used in freezing? How should the freezer be treated?

Lesson XLIX

Chocolate Ice Cream

Materials used:

2 c milk scalded	1 tb flour
1 c sugar	1 egg
⅛ tp salt	1 qt thin cream
2 tb vanilla	2 squares chocolate

Utensils needed:

Mallet and canvas bag	freezer
double boiler	measuring utensils

Operations:

1. Prepare the ice and freezer.
2. Mix the flour, sugar, and salt.
3. Scald the milk.
4. Beat the egg and add it to the flour and sugar.
5. Add the milk gradually.
6. Cook the mixture in the double boiler for 20 minutes, stirring constantly.
7. Melt the chocolate over hot water.
8. Pour the custard over the chocolate.
9. Cool. Add the flavoring and cream.
10. Strain.
11. Freeze.

Sauce

1 pt single cream
½ c sirup at 32° to 35° sirup gauge
1 tp vanilla

Make the sirup. Add it to the cream. Add the flavoring.

Principles:

Why are flour and eggs added? Describe the texture of the product.

Single cream is cream 12 hours old. As a rule this cannot be beaten stiff. It can be beaten to a froth, and this skimmed off. Double cream is cream 24 hours old. This can be beaten stiff.

What does the addition of salt do? The addition of a little stick of cinnamon to this cream gives a good flavor. Add it to the milk while scalding.

Instead of chocolate, cocoa may be used.

Cleaning up:

Carefully follow previous directions.

Lesson L

Plum Pudding Glacé

Materials used:

Class Rule	Home Rule
Chocolate ice cream	chocolate ice cream
fruit: raisins, currants, citron, French candied fruit	½ lb fruit: Sultana raisins, cleaned currants, slices of citron, French candied fruit cut fine
lady fingers	

Utensils needed:

Freezer
measuring utensils
saucepan
mallet and bag
melon mold

Fig. 67.— Covered Melon Mold

Operations:

1. Cook the fruit in a sirup till it is tender.
2. Drain the fruit and chill.
3. Mix with ice cream.
4. Line a melon mold with lady-fingers. Fill to overflowing with the fruit mixture. Cover with a piece of wrapping paper larger than the mold. Put the cover on.
5. Pack in ice and salt.
6. Let it stand some hours.
7. Wash the mold with cold water. Take off the cover and paper.
8. Invert the mold. The ice will slip out in a few minutes.

Serving:

Serve with sweetened and flavored whipped cream or with a sauce.

Sauce

Beat the yolks of 3 eggs until thick. Add 3 tb powdered sugar. Beat. Turn into the double boiler. Cook till slightly thickened, stirring constantly. Remove the sauce from the fire. Pour it into a cold dish. Beat the mixture till it is creamy. Flavor. Add 1½ c cream whipped to a dry, stiff froth.

Principles:

A frozen pudding is made with a Neapolitan or Philadelphia cream basis with the addition of a preserve of fruits and nuts. It is generally molded in a melon mold. In repacking a frozen mixture, less salt may be used. Preserved fruit should not be added to ice cream until the latter is partially frozen, as the heavy fruit will settle and sink to the bottom in a liquid.

A fine salt dissolves more rapidly than a coarse salt. What effect does this have on the freezing process? Fine salt, however, is too expensive to be used. Barrel salt is quite satisfactory. Pulverized rock salt is very good, as it easily penetrates the crevices between the ice particles and does not melt so rapidly.

The finer the ice is broken, the more surface is exposed to the action of the salt and the more rapidly the mixture freezes. Coarse lumps are likely to cause trouble by interfering with the action of the freezer. If it is hard to break the ice fine, the addition of a little water at the start will facilitate matters. A quart to a gallon is a good proportion, especially if snow be used. Ice that has once been used for freezing may be used for packing purposes. Finer ice demands a smaller proportion of salt, the proportion of 1 : 12 or 1 : 13 being sufficient to freeze a mixture. One-third the salt should be placed halfway from the bottom and the rest near the top so that it can work all the way down. It is waste of material to place a great deal of salt near the bottom.

Cleaning up:

Remember that utensils can be preserved only by being kept clean and dry. Follow directions already given.

Lesson LI

Fruit Sherbet

Materials used:

1 qt water
1 tp gelatin
juice of one lemon
2 c sugar
scant pt fruit juice

Utensils needed:

Freezer
lemon squeezer
saucepan
measuring utensils
bowls

Operations:

1. Soften the gelatin in cold water.
2. Boil the sugar and water vigorously for 20 minutes.
3. Add the gelatin and stir until it is dissolved. Should this be added while the sugar and water are boiling? Why?
4. Strain.
5. Cool.
6. Freeze.

Serving:

Sherbets, especially when made with water, are less rich than ice cream, and are commonly served with the meat course at a formal dinner. They also make a very good dessert.

Principles:

There are two classes of water sherbets, simple and compound. The simple is composed of one kind of fruit juice and sirup, while the compound has several kinds of fruit mixed together. The juice of one lemon is usually added to all sherbets to bring out the flavor of the fruit.

Making a sirup with water and sugar insures an ice that will be fine-grained and will keep frozen longer.

To make the sirup: To a sugar sirup at 28° by the sirup gauge, add fruit juice to bring the density down to 20°. Add the gelatin softened in 2 tb cold water, melted over hot water.

The gelatin gives a light and smooth consistency to the ice. When the mixture is frozen, beat the white of an egg till stiff. Add 1 tb hot sirup to this, beating well. Turn this into the frozen mixture.

Additional Recipes

Cream Ice with Junket

1 c cream
junket tablet dissolved in
1 tb cold water
1 qt milk
1 c sugar or 1½ c sirup at 28°
1 tb vanilla

Heat the milk and sugar till they are lukewarm. Remove from the fire and add the junket tablet dissolved in water. Add the flavoring. Let the mixture stand undisturbed until it thickens. Turn it into the can and freeze as usual.

Chocolate Sauce

(To be served with vanilla ice cream)

1 sq. Baker's chocolate
1 tb butter
½ tp vanilla
1 c sugar
½ c water

Melt the chocolate over hot water. Add the butter, water, and sugar. Boil for 15 min. Cool and add the vanilla.

FOOD PRINCIPLES

Lesson LII

FOOD PRINCIPLES AND DIETARY (Elementary)

The body's treatment of food:

It is a common enough saying that we are what we eat. This is and is not true. Our bodies are fitted with a full equipment of chemicals and a series of retorts wherein the food we eat is changed and changed again, until it has been transmuted into something quite different from that which we ate. More wonderful still, the chemical and mechanical appliances with which our bodies are provided have the power of taking quite different foods and transmuting them into the same tissue or fluid. In other words, the body takes what it needs and throws off the residue.

Poisoning by indigestion:

But just here is the difficulty — we might say the danger. If we give our bodies foods that are hard to change into blood and bone and tissue and brain and body power that we must have, something is going to be overworked. Our supply of chemical fluids may not be sufficient to perform the extraordinary task imposed on them. The mechanical part of digestion, as, for instance, the churning process of the stomach, may be interrupted by the uncongenial food and the work left unfinished. As a result, some of the half-digested food may be left in the various retorts and our system will be poisoned.

However, such is the perfection of our bodily mechanism that any mistake of that kind is soon rectified unless the mistake is made so often that the machinery becomes impaired beyond its own power to mend.

Food elements:

What are the materials of which the body is composed, and how do they differ from those of the foods which nourish the body? Body and food are made up of the same chemical elements differently combined. From the above it will be seen that it is the part of digestive and dietetic economy to eat food that requires as little change as possible in order to make it take the form of tissue and bones and blood. But there must also be some food that is fitted for little else than just to help make the chemical changes. Cabbage has a little blood and tissue in it, but it is chiefly designed to irritate the intestines into action. Many other vegetables have a like office.

Other elements needed:

But in addition to the blood and bones and tissue of which our bodies are constructed, something else is needed. If nothing were required but tissue and blood and bones, it would be easy to construct a person. Animals, even of the lower classes, have more than these three elements. What is the other constituent needed to make a walking, talking, eating, and sleeping human being? Is more than one constitutent required to complete the animated being?

Certainly energy is needed and heat is required. Heat and energy are really one and are properly included in the term energy, but for convenience we ordinarily speak of them as two separate forces. However, the food that provides the body with the one provides it with the other.

Providers of heat and energy:

You have learned something of the food principles and you know that the carbohydrates are the chief providers of heat and energy. You know, too, that protein rebuilds the tissues of the body — tissues that are broken down every day by the hundreds of thousands and must be repaired all the time from the new material taken into the body in the form of food. You know that fats contribute to the heat and energy of the body and thereby help the carbohydrates to keep the vitality up to

a high standard; also that fats are often stored in the body for future use, that if ever the time comes when a day or two days or more must go by without any food being eaten, there will still be fuel to draw upon to keep the body at the same temperature and as highly energized as it has been and must be if health is to be maintained.

Protein not stored:

Protein is less to be relied upon for use after a day or two. It may be taken into the body in far greater measure than required, but so improvident is the body of its protein foods that it stores up none of them, throwing off immediately those not needed at the moment for tissue-building.

Chemical changes mysterious:

How does the body change food into fuel to keep it warm and full of energy? Chemical changes are always more or less mysterious. We see the materials before the process of change and after the process of change, and yet we know little besides this. We know that, in chemistry as in everything else, one and one make two. We know that in the oxidation of food heat is developed. The blood is charged with oxygen. It is then carried to all the tissues of the body and oxidation takes place. Wherever a tissue is burned by the oxygen, the heat of the burning releases energy, and the blood carries off the ash, or residue.

Seven important elements:

The chemical substances of which the body is composed are very similar to those of the foods which nourish it. Of the fifteen or twenty which are found in the body and in the food, seven are of such abundance as to be of great importance. These are oxygen, hydrogen, carbon, nitrogen, calcium, phosphorus, and sulphur. These elements are so combined as to form a great variety of compounds in both the body and the food. They most commonly combine in the body into proteins, fats, carbohydrates, mineral matter, and water. For this reason, we

look for these combinations in the foods with which we supply ourselves.

Oxygen Hydrogen Carbon Nitrogen Calcium Phosphorus Sulphur	combine into	Protein Fats Carbohydrates Mineral matter Water

Water in food:

Although we speak little of water as an adjunct of food or as a constituent of the body, it is really of immense importance, for it forms over 60 per cent of the weight of the body of the average man, being a component part of all the tissues.

Since it cannot be burned, it does not supply energy, but it keeps all the food elements in a soluble state, minimizing the effort the system must make to throw off waste food products and otherwise maintain its equilibrium of water and solids.

The mineral matters:

The other food ingredients that do not yield energy and yet are necessary to the body are the mineral matters. They form only five or six per cent of the weight of the body and are found chiefly in the bones and teeth, though they are present in solution in the tissues and blood. When food or body material is burned, the principal constituents remain as ash. In addition to the phosphate of lime which is the mineral basis of bone, the body is supplied with numerous compounds of potassium, sodium, magnesium, and iron, all of which are necessary to life.

Organic compounds:

Aside from water and mineral matter, the remaining nutritive materials are organic compounds, called so because they are drawn from the animal and vegetable world. They contain carbon, oxygen, and hydrogen in varying proportions. Some

of them also contain nitrogen and other elements. The protein, fats, and carbohydrates constitute the organic compounds found in our food.

Lesson LIII

Classes of Foods

Subdivisions of foods:

Organic and inorganic foods are subdivided into nitrogenous and non-nitrogenous. These subdivisions are further subdivided, as shown in the following table:

- Organic
  - Nitrogenous — Protein substances
    - Proteids
    - Gelatinoids
    - Extractives
  - Non-nitrogenous
    - Carbohydrates
      - Sugar
      - Starches
    - Fats
- Inorganic—Minerals
- Water

Protein:

Protein is more easily recognized by us in the lean and gristle of meat, the white of eggs, and the gluten of wheat. It forms about 18 per cent of the weight of the average man.

Proteids:

The more complex protein substances are known as proteids. These vary in character in different food materials. The albumen in the white of an egg is a proteid and also the vitellin in the yolk; also the casein and lact albumen in milk; the myosin, serum albumin, muscle albumin, serum-globulin, fibrin and globin in meat; the legumin, vegetable albumin, and gluten in cereals.

The proteids are known by the following names:

Albumen in the white of egg
Vitellin in the yolk of egg
Caseinogen, Lact albumin } in milk
Myosin or syntonin, Serum albumin, Muscle albumin, Serum-globulin, Fibrin, Globin } in meat
Legumin, Vegetable albumin } in vegetables
Gluten in cereals

Albumin:

It is clear that albumin is one of the most important of the protein substances. Most albumins are coagulated by heat 134° to 170° F. If coagulated too much or too quickly they are toughened. The majority of albumins are soluble in cold water; vegetable acids and alcohol coagulate them.

Principles of cooking:

Upon the coagulation of the albumins are based the principles that govern the cooking of all the food materials of which they are a part. Therefore when we learn how albumins are changed, rendered either tender and digestible or tough and indigestible by the process of cooking, we have learned the central principle of cooking — the principle around which all the others revolve and from which they radiate.

Experiment: There are two ways of demonstrating the effect of heat on albumin. The first is to put some white of egg in a test tube and heat it over a flame; it will become hard and tough almost immediately. The second is to put some white of egg in a test tube, place it in a kettle of water, and heat gradually. When the water reaches 134° F., white streaks will appear in the albumin; at 150° F., the whole mass will have

coagulated, but remain like a soft jelly in consistency. At 212°, or the boiling point, the albumin will be solid, but tender.

Non-nitrogenous foods:

The foods lacking nitrogen, or non-nitrogenous foods, are subdivided into the carbohydrates and fats. Carbohydrates include sugar, cellulose and starch.

Carbohydrates:

The carbohydrates are composed of carbon, hydrogen, and oxygen, the last two in proportion to form water. When consumed, they liberate heat and muscular energy, and, being easily oxidized, they save the tissues from being consumed. When eaten in larger quantities than required, they are converted into fat and stored in the body. Sucroses, glucoses, and amyloses are all carbohydrates, the first in the form of the simpler sugars, the second in the form of invert sugar, dextrose, and levulose; the third in the form of starch, dextrin, cellulose, glycogen, and gums.

Sugars:

Cane and beet sugar belong to the first class, honey to the second. In whatever form sugar is eaten, it must be changed to glucose before it can be absorbed into the system. This is done in the body by the ferment invertin which is contained in both the gastric and intestinal juices.

Glucose:

After sugar has been changed to glucose, it is only half as sweet as it was before, hence, in order to prevent waste in cooking, sugar should not be added to the food if it is possible to avoid it until the cooking is nearly finished. If sugar must be cooked, the amount will have to be increased. For instance, custard, which contains the same ingredients as eggnog, requires about a third more sugar than eggnog, merely because of the five or ten minutes required for the cooking process. Foods that require longer cooking or more intense heat demand relatively more sugar. Foods containing acids require more sugar than

those that do not, but it will be found that hot lemonade requires twice as much sugar as cold lemonade.

Climate and sugar:

Excessive use of sugar is apt to cause indigestion because it irritates the mucous membrane, but taken in moderate quantities and diffused through the different food materials, it forms a desirable and palatable substitute for starch. Persons living in a temperate climate may safely consume a quarter of a pound of sugar daily. Those living in a hot climate will use more sugar and less fat, while those living in a very cold climate will reverse this order, using more fat and less sugar.

Starch:

Starch is present in all vegetables, as it is the form in which plants store up their food. It must be changed into maltose before it can be absorbed into the system. Heat makes starch soluble in water. To prove this you have only to toast a piece of bread and place it in water. It will partly dissolve and color the water, whereas untoasted bread will merely absorb the water like a sponge, never dissolving. This will show you why cereals and other starch foods, which are not well masticated, should be prepared either by long cooking or by the addition of some dextrinizing ferment by which the food is partially predigested.

Fats and oils:

Fats and oils are practically the same. Oils are the fats that become liquid at ordinary temperature. It is in the form of oil, that is, as liquid, that fat exists in the living body, the oil held within cells with albuminous walls.

Ash from burned food:

Food that is burned leaves an ash behind it. This is the salts, or mineral matter. The use of these in the body is to harden the bones and other osseous tissue and to give tone and vigor to the muscular tissues, influence the density of the body fluids, and assist in digestion. Beef and eggs contain much iron and potatoes have salts of potash. The other salts are present in other meats and vegetables in varying quantities.

This alone would indicate the advisability of a varying diet, since the body must be supplied with salts of all the different kinds.

Water:

Water, compounded of oxygen and hydrogen, is never found pure because of its solvent power. When minerals are present in sufficient quantities to give the water medicinal power, it is called mineral water. Water is made "hard" by the presence of calcium or magnesium compounds. Boiling softens some hard water by expelling the carbonic acid; the lime, being insoluble in water without this gas, settles to the bottom of the dish. Other waters are rendered soft only by the introduction of an alkali. This is the reason why soda is often added to the water in cooking legumes, lime serving to toughen the legumin.

Uses of water:

Although water has no fuel value, being incapable of oxidation, it has many uses in the system. It is a part of all the tissues of the body and supplies necessary fluid. It acts as a solvent for food and is valuable in washing away worn-out tissue, thus preventing the formation of chemical poisons which are apt to result if the tissue change is too slow. If it is true that we are what we eat, we are also what we drink, and only by a proper balance of solids and liquids can we maintain the bodily equilibrium which we call health.

Lesson LIV

Table Cutlery (Reading)

Fingers — first implements:

The triteness of the saying that "Fingers were made before forks" does not prevent its being emphatically true. Spoons and knives were in use long before a few of the ultra-refined adopted forks, and fingers were in use at least a thousand years of the Christian era before any other implements presumed to

encroach upon their domain. Ladies in those days were complimented by gallants for their daintiness in picking up the bits of food with their fingers. To be sure, the meats and other foods were cut into very small pieces so that a finger and thumb could easily convey them to the mouth. This was the more necessary on account of the custom, then in vogue, of reclining at table, the head resting on one hand while the other was occupied with the food.

First table forks:

As late as the latter part of the seventeenth century, by many the use of a fork in eating was considered dandified and affected. It was in 1611 that an English traveler, Thomas Coryate, returned from a visit to Italy, where he had seen people who "always at their meals use a little fork when they cut their meat." He described in detail to the astonished English the use of the fork and how it was an offense to good manners in Italy to touch the common dish with the fingers. Coryate was greatly taken with the innovation and immediately adopted it.

Having a wide circle of friends and being somewhat renowned for the length of his travels, Coryate's forks awakened much discussion and not a little criticism. He was thought a finical coxcomb for his affectation of what Englishmen regarded as an effeminate innovation, and his friends called him "Furcifer" in good-natured raillery. "Furcifer" literally meant a slave, who, for punishment of some fault, was made to carry a heavy wooden fork or gallows upon his neck through the streets with his hands tied behind it.

The ancient flesh hook:

The actual use of forks began in Italy about the end of the fifteenth century. Forks are mentioned in the Bible, but the reference is to the forks used to lift meat from the pot in which it was cooked, not to an implement for eating. "Flesh-hook" is the more literal translation for the ancient utensil. A cleft spoon used for eating is supposed to be an ancestor of the fork, though this was highly localized in its use rather than general.

A forkless people:

Orientals have never adopted either knives or forks for eating, using instead bits of bread with which they scoop up soft foods, or spoons if they happen to be wealthy.

Guests provided their own cutlery:

Dr. Johnson, of dictionary fame, was interested in the Highlander's habit of carrying his table knife suspended from his belt with a dirk, ready to cut his own meat at the table and also that of the women with him, since the latter carried no knives. In France, too, travelers were expected to use their own knives at the table even after it became the custom to provide spoons and forks for them. In England, dainty ladies carried dainty table knives with their keys and such other belongings as were suspended from their girdles.

Today and yesterday:

The hostess of today would be greatly astonished and doubtless offended if one of her guests should suddenly produce from a leather case carried in his hand or by his servant a knife and fork and spoon with which to eat his dinner. She would imagine he was either mad or else fearful of the prevalent microbe. And yet it was customary in France, just prior to the French Revolution, for gentlemen invited to dinner to send their table tools ahead of them by a servant or else to carry them in their own hands. Our inheritance of the fork is singularly symbolical of our inheritance of the amenities and conventionalities of civilization.

Forks and refinement:

But the gradual advance of the use of the fork marked the advance of refinement in table customs. Used in an affected manner, it as surely betrayed ill-breeding as when not used at all. Cardinal Richelieu once detected an adventurer who was passing himself off as a noble by his use of the fork to spear an olive at table. Had he used his fingers the adventurer might have succeeded in his efforts to hoodwink the company. Equally disastrous to the pose of the parvenu as a gentleman in the

present day is his manner of holding his fork. He grips it, if ill-bred, and holds it daintily if trained to do so in his youth.

Handles adorned:

Knives and spoons, far more than forks, have always been objects of artistic adornment. There are a few beautiful designs in historic forks, but they do not compare in elaborate designs with certain knife and spoon handles. There are old Dutch knives with boxwood handles intricately carved with scriptural subjects and there is a Flemish knife with a handle decorated with tiny folk of the cupid species. In England, France, and Italy beautiful knives were made, some in dainty feminine patterns and some in more rugged style for men. The handle of the spoon invites ornamentation, and it has received it from the making of the first wide, pointed-bowled Apostle spoon to the last souvenir spoon of more recent popularity.

Beautiful modern designs:

In these days, handsome table cutlery is increasingly popular, for cut glass has largely replaced the heavier pieces of silver, and a well-furnished dinner table frequently displays very little silver besides the numerous forks, knives, and spoons beside the plates. All the best patterns in solid silver have names, so that the housewife wishing to match her silver has only to send the name and number of pieces she desires to a dealer.

ENTRÉES

Lesson LV

The Menu

Imagination in menus:

Since the discovery that the imagination stimulates the appetite to the extent of aiding digestion, the most practical persons admit that it ought to be considered in the making of the menu. It is comparatively easy to assemble dishes giving a correct proportion of the food principles. To make a menu that will give the right proportion of the food principles and at the same time stimulate the appetite before appeasing it is a task worthy of the artist-mind.

Like the musical program:

This presents the same problem as the musical program. Not every brilliant performer in music is able to construct his program, first, to tease the imagination of the listener, then to stimulate it until it is all expectancy, ready and more than ready for the solid dish to be served up in the form of a symphony or sonata; nor is the executant often wise enough to set the senses dancing to a rhythmic measure at the conclusion of the feast, while the mind and heart are still dwelling upon the solid food contained in the symphony. The more jaded the musical appetite the more must it be coaxed with piquant tid-bits in the shape of the *hors d'oeuvre* (literally, out of work) served at the beginning of the musical program as it is served at the beginning of the artistic menu.

The hors d'oeuvre:

The business of the hors d'oeuvre, which is a dish served at the beginning of a meal, is to stimulate the appetite — to awaken it and prepare it for the part it is expected to play in

the dinner. Without the lively and appreciative appetite, it is not possible to dine properly. And so it must be prodded and tormented into activity, enraged, if possible, with torturing suspense, until it is the ravening monster the woodsman brings in from his toil or the section-hand from his labors. Neither the woodsman nor the section-hand requires the hors d'oeuvre. This is the need that luxury creates. It may be despised by the advocates of the simple life, but it is none the less a need, for it serves to create in those of a too sedentary life an appetite that is indispensable to the digestion of their food. An oyster cocktail is a typical hors d'oeuvre.

Making of the menu:

It is manifestly unfair to awaken an appetite without good reason. Each of the courses that follow the first must help to make the appetite glad that it has been awakened. First, the soup will give pause to its impetuosity, then the remové, which has brought its name and character from dead and gone centuries, then the entrées, roast, more entrées, sweets, and coffee. For at least two centuries the formal dinner menu has changed little.

Order of menu:

Hors d'oeuvre (hôrs'aû'vr)	Roast
Soup	Entrées
Remové (rā'mo vā')	Sweets
Entrées (äN'trās')	Coffee

The remové:

The course known as the remové may be correctly pronounced according to its English spelling if preferred, for it means literally a course designed to remove the first service. At its conclusion the plates are changed preparatory to the roast and the entrées that hedge it about. The remové is ordinarily a fish course, either very light or of baked or broiled fish.

The entrée:

The entrée has grown in importance and popularity in recent years. This is due largely to its economic value. It can be

made of far less expensive materials than those used in the roast and other courses. Sometimes at formal luncheons it is substituted for the roast, and in that case is made of fowl, lamb, game, veal, or beef. Lighter entrées are made of the finer vegetables and occasionally fruits are used, as in fritters. If two are served, the more delicate should be served first, and they should contrast well, one having for its basis solid pieces of meat and the other being in the form of purée or having for its basis a chopped ingredient. A salad is often served for the second entrée or served immediately after it.

Roasts:

The roast is the appeasing part of dinner. It may be richly garnished and accompanied by potatoes in some form and by another vegetable if desired. It is accompanied also by some frozen sweet, like Roman punch or sherbet. The character of the roast must influence the character of the entrées that come before and after. If it is a capon, the entrées must be light or the meal will be too rich for the ordinary appetite.

Sweets:

Sweets are merely desserts. Ice cream, pudding, and pie are included, also candies and nuts, which are usually placed on the table at the beginning of the meal.

Coffee:

Coffee is usually served without cream and sugar at formal dinners. Its office is to awaken the senses from the drowsiness that is apt to overtake them at the close of a good meal.

Economical entrées:

Meats that have been previously cooked are successfully used in many entrées. Flavor lost in the process of reheating may be restored by the careful use of meat juices or stock. Previously cooked vegetables are also good when combined in entrées and served with sauces.

Entrées in timbale and puff cases:

Swedish timbales are popular for formal luncheons because they are both dainty and decorative. Patties are also attrac-

tive and popular for the same reason. Creamed foods and those cooked in sauces or in Newburg style are served in timbale cases, and patties are similar, except that they are richer, both as to the paste of which the case is made and the filling. Patties are cut with a patty cutter out of rich puff paste like that used for pies. The centers cut out may be baked separately and used for covers. Chicken patties are favorite entrées.

Lesson LVI

Cheese Timbales

Materials used:

Class Rule	Home Rule
¼ tb butter	2 tb butter
⅛ tb flour	1 tb flour
1 tb cream	½ c cream
1 tb milk	1 c milk
1 tb soup stock	½ c soup stock
1 tb grated cheese	½ lb grated cheese
a few grains of salt	salt
paprika	paprika
½ egg	3 eggs
½ yolk	4 yolks

Utensils needed:

Granite iron saucepan, egg beater, folds of paper, bowl, timbale molds, pan for cooking

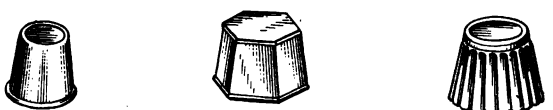


Fig. 68.— Timbale Molds

Operations:

1. Make a sauce of the butter, flour, and liquid.
2. In this sauce melt the cheese.

3. Add the seasonings and the beaten eggs.

4. Bake in small timbale molds standing on a folded paper in a pan of hot, not boiling, water.

5. Cook until the centers are firm.

6. After the timbales have been poached until firm, remove them from the water and let them stand a few moments before removing them from the molds.

Serving:

Serve the timbales hot with cream or tomato sauce.

FIG. 69.— Cheese Timbales

Principles:

The word timbale was formerly applied to any preparation poached in molds of a shape not unlike a drum—straight wires making the diameter the same at top as at bottom. Nowadays the name is applied to a preparation molded and poached, however shaped, and also to a pastry product described in Lesson XXVIII.

Timbales are made of all sorts of delicate fish, shell fish, and meats, as well as eggs, cheese, and vegetables. They are a popular entrée, but are not quickly nor easily made, and are therefore used by most people only for very formal luncheons and dinners.

The eggs in timbales are not added for lightness, but for texture, flavor, and body, hence the whites and yolks are beaten together. An egg timbale is really a baked custard. Green pea and tomato timbale are custards in which purée has been introduced to add softness and flavor, and they are seasoned with the savory seasonings best suited to vegetables.

Lesson LVII

Salmon Loaf

Materials used:

1 c fish (minced)	½ c milk
1 c stale bread crumbs	salt, pepper, parsley
2 beaten eggs	lemon juice

Utensils needed:

Cups and spoons for measuring egg beater mold

Operations:

1. Mix the minced salmon or other fish with the bread crumbs.
2. Add the beaten eggs.
3. Add the milk.
4. Season to suit the taste.
5. Place the mixture in a round, or oblong mold and bake or steam it 30 minutes.

Principles:

The cheaper salmon can be used for this purpose and almost any of the white-fleshed fish may be substituted. Use just enough milk to make the mixture moist. One can of salmon will serve from four to six persons, even more if used as one of several entrées at a luncheon or dinner. Seasoning is a matter of taste. The juice of half a lemon is not too much for a can of salmon and about ¼ tp salt is required.

Serving:

Serve the loaf either hot or cold with garnish of parsley or lettuce.

Lesson LVIII

Mutton Casserole

Materials used:

1 lb meat from neck of sheep	1 c carrots	1 c peas
	1 c turnips	salt, pepper

Utensils needed:

Knife for peeling vegetables
knife for cutting meat
casserole
cup for measuring
frying pan

Operations:

1. Sauté inch-cubes from the neck-piece in drippings.
2. Put these in the casserole on the vegetables, which have been cut somewhat smaller than the meat.
3. Add a very little boiling water.
4. Cover tight and cook till the ingredients are tender.

Principles:

The operation of frying brings out the flavor of the mutton. The cuts from the neck muscles are very richly flavored and juicy. The dish may be varied by adding other vegetables or substituting some that are liked better. Onion is liked by many.

Serving:

Serve hot in the casserole.

Lesson LIX

Suprême of Chicken and Cauliflower

Materials used:

Class Rule	Home Rule
⅛ cauliflower	1 cauliflower
⅛ c raw chicken or veal pulp	1 c raw chicken or veal pulp
1 egg	4 eggs
a few grains of salt	½ tp salt
a few grains of paprika	½ tp paprika
1 tb cream	1 c cream
1 tb chicken broth	1 c chicken broth

Utensils needed:

knife
draining cloth
buttered paper
utensils for measuring
skillet
quart mold
spoon for beating
meat chopper

Operations:

1. Separate the cauliflower into flowerets.
2. Shorten the stems and trim each to a point.
3. Let the cauliflower cook six minutes in salted boiling water.
4. Drain and dry it on a cloth.
5. Line the bottom of a quart mold with buttered paper.
6. Butter the mold thoroughly.
7. Place the flowerets of cauliflower in it, one layer above another, to fill the mold loosely.
8. Beat the other ingredients into the chicken pulp, the eggs, one at a time, and very smoothly.
9. Add the cream and broth very gradually.
10. Pass the meat through the chopper, using the fine knife in order to make it of fine texture.
11. Pour the mixture over the cauliflower in the mold to cover it completely.
12. Cook one hour in a pan of water that is just below the boiling point or until the suprême is firm in the center.

Serving:

Unmold the suprême on a serving dish. Garnish with flowerets of cauliflower. Serve cream, Hollandaise, or some other sauce with the entrée.

Principles:

Supreme is a short form for sauce suprême. This is a white sauce made by boiling down ham, veal, beef, or fowl bouillon, then adding soup stock, seasonings, vegetables, and thickening, and again boiling and straining.

Forcemeat, which is the basis of nearly all the more delicate and delicious entrées, is the basis of Chicken Suprême. In order to make the chicken of still finer texture than will result from passing it through the meat chopper, it may be pounded and forced through a sieve. A gravy strainer set in part of a double boiler may be used to supplement the chopping and pounding.

In most forcemeats, bread panada is mixed with the meat pulp. This is merely bread soaked in water until soft, pressed dry, beaten into a paste, cooked a few minutes, and beaten again with an egg. This mixture provides the right ingredients to modify the strength of forcemeat, and when well seasoned, molded, and cooked slowly, makes a delicious entrée. Any meat may be used.

Chicken Suprême is one of the most delicious of entrées because it combines a delicately flavored vegetable with an equally delicately flavored meat pulp, the eggs, chicken broth, and seasoning combining to complete one of the most delicious dishes imaginable.

Additional Recipes

Curried Rice With Green Peas

1 pt shelled peas
2 tb butter
2 tp salt
1 onion
4 c broth
1 tb lemon juice
1 c blanched rice
½ tb curry powder
a little black pepper
3 tb melted butter
1 tp sugar

Fig. 70.—Curried Rice with Green Peas

Pour ½ c boiling water over a pint of shelled peas, add 1 tp salt, and let the peas simmer till they are tender. Season with one or two tb butter and a little black pepper. Before setting the peas to cook, sauté an onion, peeled and cut in halves, in 3 tb melted butter, then add the cup of blanched rice (done by putting it first into boiling water, then into cold), 1½ tb curry powder and stir these in the butter until it has been absorbed; add 3½ c boiling water, 1 tp each of sugar and salt and 1 tb lemon juice. Cook until the rice is tender.

Arrange the rice in the shape of a wreath and turn the peas into the center.

Macaroni Croquettes

Scant c macaroni	1½ c broth	½ tp salt
3 tb flour	1 egg (if desired)	¼ tp paprika
¼ tp mustard	3 tb butter	½ c grated cheese

Cook and blanch the macaroni. Make a sauce of the other ingredients; add the cheese and beaten egg and macaroni. Turn the mixture on a buttered plate to form a sheet a generous half-inch in thickness. Let it stand until cold. Stamp into rounds with a biscuit cutter. Cover with egg and crumbs of bread and fry in deep fat. While cooling cover it with buttered paper to prevent the formation of a crust.

Spinach With Stuffed Eggs

½ pk spinach	¼ tp curry powder	4 hard-cooked eggs
3 tb butter	tomato catsup	¼ tp salt
½ c tongue or ham	salt and pepper	¼ tp pepper

Boil the spinach till it is soft. Chop it very fine and season it with salt and pepper. Add the butter and mix thoroughly. Place the spinach in a dish. Cut the eggs in halves. Remove and powder the yolks, add an equal quantity of the meat chopped fine, also the salt, pepper, curry powder, and enough tomato catsup to hold the mixture together. With this fill the empty halves of the egg whites, heaping and rounding the contents. Place on and about the spinach and serve.

Ragout of Mutton

3 lb mutton	potatoes	1 clove
2 tb flour	¼ c butter	salt and pepper
1 onion	1 clove of garlic	sprigs of parsley
bay leaf	1 sprig of thyme	

Cut the mutton in inch cubes and sauté in the butter till the meat is well browned. Stir in the flour and when it is blended with the butter, add enough cold water to cover the meat. Add all the seasonings, leaving the onion whole. Simmer till the meat is tender, stirring occasionally. Pare and quarter several potatoes, cut them smaller if they are large, and add them to the meat. There should be about the same quantity of potato as of meat or a little more. Simmer until the potatoes are tender. Serve

the mutton in the center of the dish and the potatoes around it. The liquid may be poured over all. Veal, beef, chicken, rabbit, and lamb may be prepared and served in the same manner.

Casserole

2 c meat (chopped)
¼ c cracker crumbs
1 egg slightly beaten
stock to moisten
1 c cooked rice
salt, pepper, cayenne, celery salt, onion

Partly fill a buttered mold with cooked rice. Place the meat and other ingredients (mixed) in the center. Cover with buttered paper. Steam. Serve with tomato sauce.

Lesson LX

Kitchen Chemistry

Kitchens are laboratories:

Every kitchen is in some sense a laboratory. If the kitchen is to be made an interesting place in which to live and work, it should be a laboratory of research. Fitted with modern appliances, it is an ideal place for experimental work in cookery. Every cook who takes an interest in her work likes to try new dishes, either by formulae of her own or those borrowed from friends or cook books. She may not be able to match the achievements of Roman cooks, who were able to dress pork and give it the flavor of any meat they chose, or to cook and dress vegetables in the perfect semblance of meats and fish both to the eye and the palate. She may, however, produce dishes quite as interesting and far more nourishing, for she has at her command the accumulated knowledge of the centuries, capped by the recent development of scientific knowledge.

Scientific feeding:

The chemistry of foods and the part each plays in the nourishment of the body is a study that is comparatively new, but eminently worth while. When teachers of domestic science began to notice that stock breeders were achieving wonders by the scientific feeding of the animals under their care, they began to apply their own scientific knowledge of foods to special research leading to a better nourishment of the body. The result has been most interesting. It has been demonstrated over and over again that the human animal, like the others, can be vastly improved in health and appearance by a properly apportioned diet. Their researches, and more particularly the researches of physicians who have interested themselves in nutrition, have led to the opening of an entirely new field of practical study and knowledge.

Appetite and digestion:

Since Prof. Pavlov of St. Petersburg established positively that the flow of gastric juices is caused primarily, not by contact of food with the stomach walls, but by a keen desire for food and by the pleasure of eating it, there has been a readjustment of the accepted system of scientific feeding of the human animal. The best results can be obtained only by creating keen appetites or sharpening the ordinary appetite by means of appetizing foods. Prof. Pavlov won the Nobel prize (one given for the most valuable scientific achievement of the year) for his discovery concerning the relation of appetite and taste to digestion. If our own common sense did not cause us to appreciate the value of his discovery, the award of the Nobel prize would indicate it as the supreme physiological discovery of its particular period.

The housewife's two duties:

The course of the wise housewife is therefore plain. She must keep two things constantly in mind; to provide her household with the prpoer proportion of protein, fats, starches, and sugars, and to offer them in foods that are so selected and cooked that they appeal strongly to the sense of taste.

Civilization and cooking:

There is real foundation for the belief that the progress of cooking is the progress of civilization. Cooking is one of the most excellent of the sciences. It deserves this distinction from the measure in which it contributes to the comfort and gratification of man. And yet it has been for many years deemed beneath the talents of intelligent women, who have relegated the office to ignorant and untaught servants.

Revival of cookery as an art:

Cooking is, however, enjoying a splendid revival at the present time. Brilliant women are finding out that it is a science worthy of their best mental efforts and they are bringing those efforts to bear upon it. Women of wealth nowadays go into their kitchens to prepare dishes or even entire meals for the entertain-

FIG. 71

One end of kitchenette of Housekeeping Experiment Station at Stamford,
Copyright, Georgie Boynton Child, from

FIG. 72.

Conn., showing compact arrangement of stove and sink equipment. *The Efficient Kitchen*, McBride, Nash & Co.

ment of their guests. They regard cooking as an accomplishment of the very first order. They have found that the inventors have provided an automatic instrument that far surpasses them in the performance of musical compositions. There are too many painters and artists of the very first rank to make their efforts with the brush and chisel seem more than amateurish. But every woman has it in her to become an excellent cook, and the twentieth century woman has had the sense to recognize the value of an art that is in universal demand. Comparatively few men and women care a great deal for pictures. The world is well supplied with music of almost every sort. But it must be remembered that the whole world eats at least three meals a day and that those meals must be cooked by somebody. No wonder the demand for good cooks is proverbially large and the supply notoriously inadequate. If a woman wishes to make herself needed in the world, she can not do better than to equip herself in the science and art of cookery.

Lesson LXI

New Kitchen Appliances

Since electricity has been permitted to help in the kitchen, the work there is much easier than it used to be. Our grandmothers may have been wonderful housekeepers, but electricity is a better one, so far as electricity has had a chance to show what it can do. The inventors are busy giving it more chances and our granddaughters may be able to perform such marvels of quick cooking and expeditious serving with its help that our own appliances will seem clumsy and slow by comparison.

Cooking and ironing by electricity:

The electric flatiron (see frontispiece) has lowered the temperature of the laundry and made the work vastly easier than it was even ten years ago. Electric cook stoves and ranges now

assume to do the work formerly performed somewhat reluctantly by the old-time coal range. The city housewife who has not an electric range is quite apt to have an electric toaster, which simplifies toasting to the last degree, besides enabling the housewife to serve the toast while it is perfectly fresh and hot.

Fireless heat and iceless cold:

The fireless cooker was looked at askance only a very few years ago, but it has made its way until few households are now willingly without them. These cookers are variously made, some of the newer ones being built on a highly successful system of air exclusion. Almost any one with a little mechanical ingenuity can make a fairly good one, one that really cooks the food, that is, retains the heat at a sufficiently high temperature to allow the food, once heated, to continue cooking until the dishes are done. The thermos bottle acts on the same principle. By a rigid exclusion of air its contents are maintained for an indefinite length of time at the initial temperature, either hot or cold.

FIG. 73.—Fireless Cooker

Economical cooker:

A cooker which conserves heat, thus saving fuel expense, is now on the market. Only a single burner need be used to bake, roast, boil, or stew. It has numerous appliances in compact form and can be used on any kind of stove or range. By means of a perforated steel plate with a downward flange and tinned wire stand, known as an equalizer, there is perfect distribution of heat which browns the top and bottom evenly.

Visible baking:

The mysteries of a dark, and oftentimes too hot, oven have been one of the chief worries of the housewife. Seldom did a day go by when her range oven did not burn the bottom or the top of something entrusted to its care. Now dealers are offering

ovens fitted with glass doors which enable the cook to watch the process of baking without exposing the contents of the oven to the air. As cool air is apt to be fatal to the success of those articles that depend on the action of the heat for their lightness, such an oven seems like a boon.

Coffee filter:

Experts have determined that the ease of extraction of the virtues of the coffee bean is directly proportioned to the fineness

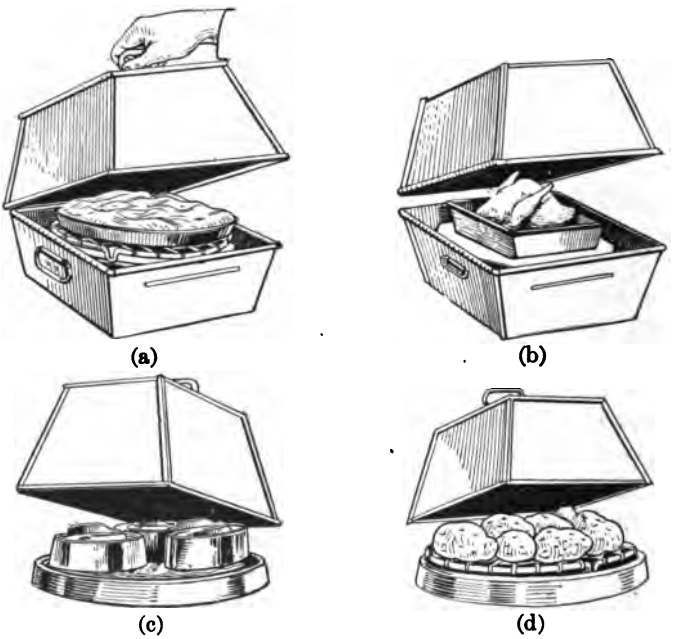


FIG. 74.— Economical Cooker: (a) Baking Pie. (b) Roasting Chicken. (c) Heating Flatirons. (d) Baking Potatoes

of the grinding, and that to grind coffee finely is economy, as less coffee is needed. There has been placed on the market a coffee filter, (see cuts on page 230), which will make coffee from the pulverized bean in three minutes if boiling hot

water is used, in ten or twelve minutes if cold water is used. The coffee is perfectly free from sediment. Less coffee is used, by this method, and the chemical examination of the liquid shows much less tannic acid, which is a harmful ingredient of coffee, than is found in either boiled or percolated coffee.

Automatic serving:

There are several devices now on the market which are designed partially to take the place of waitresses. The serving-

FIG. 75.— Oven with Glass Doors

table that runs easily on four wheels is one of them and another is a revolving server which merely passes things at the table.

Asbestos pads:

Besides the small asbestos table pads which have long been in use, there is now a folding asbestos pad which covers the entire table when spread out. It can be enlarged with "leaves" in the same way that a table is enlarged, and is ordinarily used to protect a finely polished table.

Cleansing devices:

Suction cleaners have done much to prevent the activity of the germ and to keep dust and dirt from rising into the air and entering into the cupboards where food is kept.

Miscellaneous:

Refrigerators that are satisfactorily ventilated, ice cream freezers that whip air into the freezing mixture, and many other small devices and improvements are being put on the market almost daily.

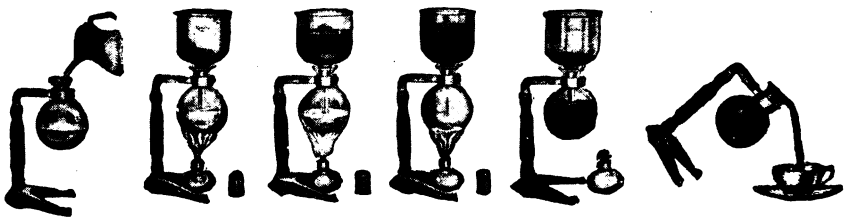


FIG. 76.— Coffee Filter

DIETETICS

Lesson LXII

DIETETICS

The human mechanism:

The human body is a complex mechanism that runs night and day. Some bodies run at higher mechanical pressure than others. All contain the fire of life which must be kept constantly alight, which ought to be fed several times daily, which should be nourished upon substantial foods, blown upon by good air, and stimulated by exercise. That is all there is of hygiene, unless it is taken up in all its multitudinous details, which do not expand the principles.

Muscle builders:

You have learned that the body uses protein, carbohydrates, fats, and mineral matter, that there must be protein foods to replace the tissues used up by the wear and tear of daily life. When we speak of food as a muscle builder, we mean foods that contain the material that is actually to replace the parts of our muscles consumed by exercise. Healthy muscles are always fresh and new. They must be broken down daily by exercise or they will become flabby and old, and our daily supply of protein will pass through the system without being used.

Food values:

Foods containing carbohydrates and fats must be eaten in order to supply the necessary heat and energy. Mineral matter in some form or other must be supplied. There must be some bulky foods to aid in digestion. The food must be suited to the age, occupation, the climate, and the size of the consumer. A man who is leading an active outdoor life can eat heavier and richer food than one of sedentary life. A child should not have the same diet as an old person.

The body a work plant:

The complexity and subtlety of the processes of the human mechanism are so great that it is difficult to reduce them to the terms of a dietary. It is easier to think of the body as if it were a work plant, that is, in its adult state. The body of a child may be regarded as such a plant in the building. With the products of our work plant we have nothing to do. Our task is to keep the plant in condition for its highest possible output. If the body to be provided with food is a brain-work plant, we must see to it that plenty of energy is supplied and not too much bulky food. If it is a muscle-work plant, plenty of protein and bulky vegetable food will be required. In either case, there must be mineral matter and carbohydrates. The amount of fat supplied in the food should be regulated by the tendency and condition of the person. If there is too great a tendency to thinness or any hint of a wasting disease, such as tuberculosis, fat should be eaten in large quantities and in such form as will make it easily digestible.

Planning the dietary:

In planning the dietary either for well or sick people, the best sources of the different food requirements must be taken into consideration. The amount of food which must be eaten every day is measured in a manner similar to that of the measurement of the fuel for an engine, only the body is a much more complete working machine. It is more like a factory than an engine, and for that reason requires protein and mineral salts to replace its mechanism, besides fuel for its energizing power.

The calorimeter:

The value of food is measured by an instrument known as a calorimeter. There are many kinds of calorimeters, but they are all constructed on the same principle. In one bomb calorimeter, the food substance is put into a chamber and ignited, and the heat of the burning substance raises the temperature of the water in the surrounding vessel. If 1000 grams of water are in the vessel and the temperature is raised 2 degrees Centi-

grade, the number of calories produced by the substance is 2000, and the fuel value is 2000 calories. From this can be determined the fuel value of one quart or one pound of the substance, and the food substance will furnish the body with that number of heat units, providing all the pound of food is properly digested. By such experiments it has been found that:

1 gram of protein will yield 4.1 calories;
1 gram of carbohydrates will yield 4.1 calories;
1 gram of fat will yield 9.3 calories.

To figure food values:

To determine the fuel value or number of calories any food will yield, multiply the grams of proteid and of carbohydrates each by 4.1 and the grams of fat by 9.3 and find their sum.

Overburdening the digestive organs:

It will be apparent to the student who has grasped the basic food principles that only a limited amount of food can be digested properly and that any excess will overwork both the digestive and secretory organs. In the days when man still battled with knives instead of long-range guns, a noted epicure declared that more men died by their table knives than by any other. Doctors nowadays are inclined to think that the knife of the surgeon might be thrown away if it were not for that of the table. By which we are to understand that more people suffer from too much eating and drinking than from any other cause.

Food proportions:

Next to the quantity of food as a whole, the correct proportions of the three food constituents — proteins, carbohydrates, fats — must be considered. Each of these three classes is digested by distinct ferments, the secretion of which is stimulated by some foods more than by others. The glands which secrete these ferments must have their proper amount of work. They will be equally the worse for too much work or too little.

Digestion and absorption of food:

All food must be digested before it can be assimilated and absorbed into the tissues and blood and bones of the body.

The processes of digestion are of two kinds, mechanical and chemical. The mechanical process is begun in the mouth when the food is masticated and mixed with the saliva and it is continued in the stomach and intestines. The chemical process is due to ferments, or enzymes, contained in the various digestive juices.

Enzymes (also called soluble ferments, zymeses, and diastases), are active, organic substances secreted by cells which have the property, under certain conditions, of hastening chemical reactions between certain bodies without entering into the composition of the products which result. Enzymes are secreted in the ptyalin of the saliva, in the gastric juice of the stomach, and the pancreatic juice. These enzymes cause changes in the food we eat, rendering it more easy to assimilate. Enzymes are also secreted by the cells of the yeast plant and cause fermentation to take place.

The names of the digestive juices, the enzymes, and their action can be seen in the following table:

Fluids	Enzymes	Action
Saliva	Ptyalin	Turns starch to dextrin and maltose.
Gastric Juice	Rennet	Solidifies fluid proteid.
	Pepsin	Turns proteids into proteoses and peptones and dissolves connective tissue.
	Invertin	Inverts cane sugar into glucose.
Pancreatic Juice	Amylopsin	Continues work of ptyalin; *i.e.*, changes starch to maltose and glucose.
	Trypsin	Continues work of pepsin; *i.e.*, changes proteids to peptones and the waste products, leucin and tyrosin.
	Steapsin	Decomposes fats.
Intestinal Juice	Proteolytic	Continues work of pepsin and trypsin.
	Invertin	Inverts all sugars to glucose.
Bile	.....	Saponifies fats.

The digestive juices:

The saliva in the mouth contains ptyalin which changes starch to dextrin and maltose. The gastric juice of the stomach contains rennet and pepsin, which respectively solidify fluid proteids and dissolve tissue. The pancreatic and intestinal juices continue the work of the stomach juices in various ways. Bile, another digestive liquid, changes fat into soap.

Bacteria have an important part to play in the chemical digestion of food. They are present even in the healthiest intestines. Their office is to break up the food into simpler substances and to assist in the formation of waste products. The substance resulting from gastric digestion is called chyme and that resulting from intestinal digestion is called chyle.

Absorption of food:

The absorption of food takes place chiefly in the small intestine, which is equipped for its office by its lining of villi, through the cells of which the products of digestion enter the blood. Most of the products of digestion are carried by the blood through the portal vein to the liver, thence by the hepatic vein into the inferior vena cava, and so into the general circulation. The blood thus becomes charged with material destined for all parts of the body. Its supplies are of all kinds, and each tissue with which the laden blood is brought into contact has the power to select the substances it requires for repair or construction and reject all others. The blood also serves to convey waste from the tissues, and is constantly exchanging its load of fresh material for an equally large load of used material.

Disposal of excess foods:

Any excess of fat or cabohydrate is stored up in the body to be used when needed, but protein is not stored up. It is thrown off immediately by the body if not required at the moment. As the kidneys perform this office of excretion, they are often irritated by a diet that is too rich in protein. It is not the quantity of food we eat, but the quantity we absorb that nourishes the body.

Calories required per day:

Persons engaged in different kinds of work differ widely in the number of calories they require daily. From 2000 to 2500 calories a day are needed by a person at absolute rest. A person who does light work needs 3000 to 3500 calories, and one hard at work needs 4000 to 4500. A woman requires four-fifths a man's ration. A child of fourteen to sixteen years of age requires eighty per cent of the food of a man engaged in moderate work. Younger children require a smaller per cent, varying with their years and the rapidity of their growth. A two-year old child requires thirty per cent of a man's ration.

Planning a menu:

In planning a menu, the main points to be considered are the number of persons to be provided for, their age, sex, occupations, the cost of the food, the supply of various food materials on the market, the climate, weather, and the season of the year. The housewife must also consider the time required for the preparation of the food.

Too little attention is ordinarily paid to the combination of flavors. As taste plays a large part in influencing the flow of the digestive juices, it is highly important that it should be pleased. There should always be a fair proportion of substantial dishes and of those that are light and easily digested. There should be dry foods and moist foods, not more than one kind of gravy and not more than one kind of sauce at a simple dinner.

A little thoughtful attention paid to the making of the daily menus will soon accustom the student to judge quickly whether she has combined too many proteids or too many fats in a single meal. Before she has acquired a definite knowledge of the contents of the various foods, she may have recourse to the table of Approximate Composition. By weighing individual portions of several typical foods and having thus found the amount required for each person, she may multiply the result by the number of persons to be provided for. She will find, however, that for the average person a portion of meat,

not counting bone, is about a quarter of a pound, that bread merely as an acessory to a meal will be eaten to the extent of three-fourths of an ounce per capita, and that at least two ounces of bread will be consumed if the meal is largely of sandwiches or lacks vegetables and other foods of a like nature.

Computing a menu:

In computing the food value of a portion of mashed potatoes, for example, it is necessary to consider the milk and butter that have gone into the making of the dish, as well as the potatoes. Two and one-half ounces of potatoes will yield 2.1 grams of protein, .3 grams of fat and 17 grams of carbohydrates, equaling 75 calories in all. Three drams of milk will yield .5 gram protein, 1 gram fat and .8 gram carbohydrates, 14 calories in all. One gram of butter will yield .1 gram protein, and 3.6 grams fat, making 36 calories in all. The sum of these calories in a single portion of mashed potato is therefore 125.

Apportioning calories to meals:

In planning the meals for the day, a full third of the total number of calories per day for each person should be allowed for the midday meal, which is generally called lunch. For breakfast, a little less than one-third is allowed, and for dinner more than a third. If three thousand calories are allowed for the three meals, about eight hundred should be eaten for breakfast, one thousand for luncheon, and twelve hundred for dinner. The two latter should be interchanged when the heaviest meal of the day is at midday.

BREAKFAST

MATERIAL	Measure	Ounces	Grams	Protein in Grams	Fat in Grams	Carbohydrates Grams	Calories	Cost
Farina	9⅓ tb	3.53	94.5	9.765	10.35	1.295	300	$.0175
Dates	11	1.96	56	1.176	1.56	43.904	200	.018
Skimmilk	1¼ c	4.7	135	4.59	.40	6.885	100	.0038
Sugar	1½ tb	.57	16.6	.....	.....	16.6	67	.0025
Toast	7 slices	4.05	115	12.522	1.53	61.56	300	.02
Butter, Oleo	3 tb	1.38	39	.39	33.15	.....	300	.016
Coffee	2 tb	.05	12.5	.....	.....	.....	.....	.008
Cream	2 tb	1.85	25.7	.64	9.50	2.31	50	.0062
Total	.....	18.09	494.3	29.083	56.49	132.554	1317	.0920

LUNCH

MATERIAL	Measure	Ounces	Grams	Protein in Grams	Fat in Grams	Carbohydrates Grams	Calories	Cost
Macaroni	⅔ c	4.2	97.5	13.06	8.77	72.24	350	$.0165
Cheese	5 tb	2.28	64.7	19.41	25.23	.....	250	.0275
Whitesauce:								
Milk	¾ c	5.08	143.9	4.74	57.5	7.19	100	.0112
Flour	1½ tb	.37	10.5	1.76	.....	1.5	50	.0055
Bacon fat	1½ tb	.66	18.7	.18	15.92	.....	150	.0141
Crumbs	3 cracker	.85	24.18	2.369	2.2	17.67	100	.0052
Stewed tomatoes	2 c	15.6	44.2	5.204	.884	17.68	100	.0483
Bread	6 slices	5.2	150	81.32	1.98	140.92	400	.02
Butter:								
Oleo	3 tb	1.38	39	.39	33.15	.....	300	.0163
Prunes	16	4.64	132.4	2.38	.....	82.35	400	.028
Total	.....	40.26	725.08	130.813	145.434	339.55	400	.1926

Sample menus for one day:

The following menus for one are figured out to determine the number of calories provided for one day and the cost. Study them carefully and determine for whom such meals are adapted and for what number of persons.

DINNER

MATERIAL	Measure	Ounces	Grams	Protein in Grams	Fat in Grams	Carbohydrates Grams	Calories	Cost
Round steak	¾ lb	12.1	288	79.488	22.176	.....	520	.10
Gravy flour	3 tb	.75	21	.254	.042	.841	75	.0013
Fat	1 tb	.4	12	12	.....	.....	100	.....
Potatoes	4 large	8.2	480	10.56	4.8	88	400	.008
Carrots	2	7.8	221.2	2.43	.88	198.7	100	.011
Bacon fat	1 tb	.4	13	.13	11.05	.....	100	
Baking powder biscuits	8	3.1	89	8.7	6.43	64.5	800	.00118
Butter	See Lunch Menu							
Apples	4 med.	14	408	2.52	3.16	89.72	350	.0625
Milk	1 c	9.62	272.48	9.26	.81	13.89	100	.00631
Sugar	4 tb	1.4	50	.....	.....	100	200	.004
Total	.....	61.77	1854.68	113.342	61.348	555.651	2745	.19108
FINAL TOTAL	.....	120.12	3074.06	273.238	263.272	1027.755	6262	.4756

Lesson LXIII

Breakfast Menu

Steamed Rice with Bananas Cream Sugar

Omelet Muffins

Coffee Cream Sugar

Materials	Quantity Ounces	Per Cent of Protein	Per Cent of Fats	Per Cent of Carbohydrates	Per Cent of Mineral Matter	Calories	Cost
Rice and Bananas	3.1	10	1	89			
Cream	1	2	25	14			
Sugar	.5						
Egg	1.5						
Muffins*	.75						
Butter	.5						
Coffee	.5						
Cream	.5						
Sugar	.25						

*The food value of this and of other made dishes must be computed (approximately) from the recipe.

Operations:

Cook the meal; serve the meal; work out the dietary value of the meal. (See tables, pages 281 to 284.)

Principles:

Rice and bananas combine well because they complement each other in the food principles they contain. Rice, like other cereals, is highly charged with carbohydrates, and contains very little fat, a fair amount of protein, and little water. Bananas, on the contrary, contain much water, little protein, little fat, and a rather small proportion of carbohydrates. Their fruity flavor stimulates the appetite by appealing to the taste,

and sets flowing the digestive juices. Sugar and cream make the dish more appetizing and add to its food value. The sugar contains only carbohydrates and is particularly acceptable to the stomach at the beginning of breakfast, for the body, even the alimentary tract, is apt to be more or less sleepy and indolent in mood early in the morning and requires plenty of carbohydrates to energize it. Cream yields fat and protein in large measure and starts the fires of the human furnace, to speak figuratively — not altogether figuratively either, for we know that fat provides the body's heat. The egg contained in the omelet is the chief tissue-building food in this breakfast menu, for it is very rich indeed in protein, containing nearly sixty grams of protein to the pound, whereas the rice contains but thirty-six grams to the pound. Muffins will average about five grams of protein to the person, four of fat, and perhaps thirty-five of carbohydrates, though these figures are merely approximate and apply to muffins in general and the small quantity usually eaten by one person at breakfast. Coffee with cream and sugar provide a palatable stimulus that helps to awaken and enliven the whole physical and nervous system, without particular harm to the person drinking it unless there is already undue nervousness or any kind of disability that forbids a slightly stimulating drink.

Serving:

This breakfast should be served in two courses. If for a family, the rice and bananas may be served by the mother at the table, or the one who takes her place, and passed to each one. It is usual to allow each one to put on the quantity of sugar and cream desired, so these are also passed.

The omelet is brought in hot from the kitchen, after the cereal dishes are removed, and placed in front of the father, or the one who takes his place, and also the warmed plates and a serving spoon. The muffins are brought in hot and passed to each one by the waitress, if there be one, or the plate of muffins may be placed upon the table and be passed from one to the other.

The coffee service should be placed in front of the mother, who serves with cream and sugar or the latter may be passed.

This meal should be cooked immediately before it is eaten, as light food of this kind is particularly susceptible to loss of palatability by standing. It should be daintily served, not only because all foods should be daintily served, but because rice and omelet and muffins are dainty foods calling for a neat and, if possible, a fine service of light china and fine napery.

Dietary value:

To work out the dietary value of the meal, use the table of Approximate Composition of Common American Food Products in the Appendix. Find out at the most convenient market or grocery the prices of the materials named in the menu.

Lesson LXIV

Luncheon Menu

Creamed Codfish Baked Potatoes

Tea

Baking Powder Biscuit Fruit Jam

Materials	Quantity Ounces	Per Cent of Protein	Per Cent of Fats	Per Cent of Carbo-hydrates	Per Cent of Mineral Matter	Calories	Cost
Codfish.....	2.3						
Milk.....	2.5						
Butter.....	.25						
Potatoes....	4.						
Biscuit*....							
Butter.....	.5						
Tea.....	.25						
Cream.....	.5						
Sugar.....	.25						
Jam*.....	1						

*See note on page 239.

Operations:

Cook the meal; serve the meal; work out the dietary value of the meal.

Principles:

Codfish, being rich in water and protein, combines well with baked potatoes, which are rich in starch and sugar — carbohydrates. The two make a strong appeal to the taste, particularly when the codfish is creamed, that is, cooked with milk and blended flour and with or without an egg. Baking powder biscuits with butter are palatable with fruit jam and tea and they provide an excellent balance of the food principles.

This luncheon is light, but the creamed codfish and potatoes have more substance than might at first appear. There is nothing in this simple luncheon that is likely to induce heaviness in the middle of the working day, unless the biscuit disagree with a dyspeptic stomach. In that case, corn bread or cold whole wheat or raisin bread may be substituted. Coffee may be substituted for tea, or buttermilk for either. Fruit jam will aid in digesting the other foods and its palatability commends it.

Serving:

This luncheon may all be served from the table. If for a family, the father may serve the codfish and potatoes, which are placed before him, as are also the warmed plates. The tea-service should be placed in front of the mother or the one who takes her place. The biscuit may be placed upon the table and served from a plate or, if there is someone to wait on the table, they may be brought in from the kitchen and passed to each one. The jam is placed on the table and passed to each one.

Lesson LXV

Studies in Dietetics

DINNER MENU

Cream Tomato Soup

Broiled Beefsteak Spinach Mashed Potatoes

Bread Apple Pie

Materials	Quantity Ounces	Per Cent of Protein	Per Cent of Fats	Per Cent of Carbo-hydrates	Per Cent of Mineral Matter	Calories	Cost
Cream Tomato Soup	½ pt.						
Beefsteak	4 oz.						
Mashed Potatoes:							
Potatoes	4 oz.						
Butter	¼ oz.						
Milk	1/16 oz.						
Spinach	3 oz.						
Butter	¼ oz.						
Bread	⅓ oz.						
Butter	½ oz.						
Apple Pie:							
Lard	1 oz.						
Flour	3 oz.						
Apples	3 oz.						
Sugar	1 oz.						

Operations:

1. Cook the meal.
2. Serve the meal.
3. Work out the dietary value of the meal.

Principles:

In accordance with the present custom in cities, the hearty meal of the day is here given in the evening. In a rural home, where the family sits quietly for a short time after the evening meal and then retires, beefsteak and apple pie would be inadvisable. City people usually take as much or more exercise after the evening meal than at any other time during the day, and should, therefore, eat more heartily at the evening dinner than at breakfast or lunch. For a rural family, the above menu would be more suitable at noon than in the evening, and the luncheon menu would serve very well for supper.

As before stated, the dinner menu should total about 1200 calories per capita, the luncheon about 1000 calories, and the breakfast about 850. The younger members of the family will require smaller portions than those given and a man at manual labor will require larger portions.

In computing the fuel value of the meal, the tomato soup must be divided into its constituents of tomatoes, milk, and butter, though the total of these will be found to be small when measured in calories. However, the soup is valuable for other reasons — it is agreeable to the taste and serves to "take the edge off" a too hearty appetite, which might otherwise lead the diner to indulge too heartily in the less easily digested foods.

Beefsteak and mashed potatoes require some sort of green vegetables, like spinach, asparagus, or a salad of some kind to give piquancy to the meal, to stimulate the flow of the digestive juices in the stomach, and to irritate the intestines sufficiently to keep them active. Apple pie is for healthy, hearty people, and should be replaced by some such dessert as rice pudding if the housewife wishes to be very careful not to give her family anything that is at all difficult to digest.

Serving:

This dinner is served in three courses — soup, meat, and dessert. Most American families would add coffee or tea to it, although these are not necessary.

The soup should be served by the mother or hostess at the table. The soup plates and dinner plates must, of course, be warmed.

The second course demands the carving knife and fork, which should be placed at the right of the one who is to serve. The mother or hostess may serve the spinach, in which case the prepared dish is set in front of her "cover" and the individual dishes, warmed, at her left or directly in front. The service fork or spoon should be at the right of the dish.

Most people would not think of serving apple pie without cheese. What does this food add to the diet? Is it advisable?

For a family dinner, the pie may be served at the table, the mother serving, or it may be brought in on individual plates from the kitchen.

Additional Menus

BREAKFAST

Oranges

Oatmeal Cream Sugar

Poached eggs on toast

Butter

Coffee Cream Sugar

LUNCHEON

Lamb chop

Macaroni cooked with tomato sauce

Graham muffins

Strawberries Cream

Sugar

Tea Cream Sugar

DINNER

Vegetable soup

Baked salmon with stuffing

Baked potatoes

Celery and nut salad

Date pudding

BREAKFAST

Cantaloupe

Cream of wheat

Cream Sugar

Bacon Fried potatoes

Coffee Cream Sugar

LUNCHEON

Baked corn beef hash

Macaroni cooked with cheese

Raisin bread

Spiced plums

Tea

Cream Sugar

DINNER

Clam chowder

Roast beef with browned potatoes

Buttered beets

Cream pie

Lesson LXVI

Exercise in Menu-making

Make a good food ration, including breakfast, dinner, and supper, for a man who does heavy muscular work.

Make a good food ration for one day for a boy or girl of high school age.

Make a good food ration for one day for a busy woman.

INVALID DIETETICS

Lesson LXVII

Cooking for Invalids

Two phases of the subject:

There are two important phases of this special dietary subject —invalid cookery and diet for disease. Both are important.

The robust appetite:

Anyone who has had an illness knows that in order to tempt the invalid appetite, food must be more than ordinarily inviting, both in its quality and the manner of its serving.

The person with a robust appetite and who is able to take plenty of outdoor exercise does not greatly mind whether his breakfast toast is cut thin or thick, buttered clear through or not buttered at all. All that he cares about it is that it be wholesome and hot and plentiful.

The tray:

For real invalids too great pains cannot be taken to have the service of food dainty and exquisitely clean. The tray should be small and light, the china thin and either white or decorated in faint tints, the silver not heavy nor large and the napery of the finest. A single flower lying on the cloth or in the finger bowl is apt to be more acceptable than a quantity of them. Of all flowers a spicy red carnation is apt to be most attractive to a sick person.

The tray table:

The small tray-table supported on one pivotal leg is excellent for use during a long convalescence or period of invalidship. It is easily turned across the bed in front of the patient after it has been set for a meal, and afterward turned back again to be cleared and used as a book or medicine stand.

Diet depends on the disease:

The food served must depend upon the nature of the illness. In convalescence from some wasting disease, like a fever, the food should contain all the nourishment that is consistent with lightness. This is a good rule in general for invalid cooking. Broths and beef extracts, fruit drinks, eggs and egg drinks, toast, oysters, both raw and cooked, custards, cocoa, chocolate, tea and coffee, rice and milk, ice cream, and various other easily digested foods are suitable for those who cannot yet eat beefsteak and other heavy foods.

Meat for the sick:

When meat can be eaten, as it often can in illness, it should be cut into small pieces so that it can be eaten with as little effort as possible. It is always important when feeding the sick to make the process of eating as effortless as it can be made.

Soups to replace meats:

When meat cannot be eaten, a good vegetable soup may be made and served with dry toast. Barley water is very soothing to an invalid stomach and sago custard can be eaten when other foods are rejected.

Diet in specific diseases:

In many diseases, particularly those of a chronic tendency, diet is an important factor in the treatment.

Anemia. In simple anemia, the object is to give foods rich in salts. Therefore the diet should be mainly composed of rare beef, beef juice, eggs, milk, green vegetables, and sweet (not acid) fruits.

Cardiac troubles. In cardiac troubles, food should be taken in small quantities and should be of a kind that digests easily and quickly — as stale bread, lean meat, eggs, oysters, white fish of all kinds, and soups.

Constipation. For constipation, the coarser farinaceous foods should be eaten, also plenty of vegetables and fruits, and water should be drunk in large quantities. When it is considered to what an extent constipation is responsible for disease and bad

health, it will be seen that too much emphasis cannot be laid upon the importance of dieting against this condition.

Diarrhoea. Those afflicted with this trouble should take scalded milk, barley water, and whey.

Diabetes. With this disease all sugar and as much starch as possible are withheld from the diet, while fats, the other source of heat and energy, are given in large quantities.

Fevers. Since protein is essential in tissue repair, it must be given in some form to fever patients, and since an abundance of liquid is necessary to quench thirst and flush the kidneys of the excessive waste, milk should be administered in as large quantities as can be taken. This may be varied with beef tea and broths.

Typhoid Convalescent. The great danger to the typhoid convalescent is in taking too much solid food before the intestines have recovered from the ulcerous and inflamed condition that is an invariable accompaniment of this fever. Eggs and oysters should be among the first foods swallowed and they may be followed by well-cooked farinaceous foods. Meat should be minced when first given.

Stomach Disorders. In disorders of the stomach, feeding is naturally difficult. Usually such liquid foods as egg albumen, whey, barley water, and peptonized milk are allowed.

Rheumatism. This disease is always accompanied by an excess of acid in the system, and because of this, red meats must be taken in very limited quantities. Chicken, crustacean and white fish, soups, farinaceous foods, vegetables, and milk desserts, with buttermilk as the best possible drink, are advised in rheumatism.

Gout. The diet in this disease should be similar to that in rheumatism, except that fat bacon is permitted in larger quantities. Buttermilk is strongly advised as a constant drink.

Rickets. As rickets is due to a lack of fat and protein in the system and an excess of carbohydrate in the food, starchy foods are restricted and protein and fats increased.

Scurvy. Persons afflicted with scurvy suffer from a lack of salts in the system. These are supplied by feeding beef juice, orange juice, and milk or rare meats, fresh fruits, and vegetables.

Nephritis. This is a disease affecting the kidneys. The patient is kept on a milk diet during attacks, but is allowed to eat rice or barley, fish, or vegetable soups between times.

Tuberculosis. The diet in this disease is half the cure. The other half is fresh, dry air. As the disease is always accompanied by excessive tissue waste, the diet should comprise a great deal of fat in its more digestible forms — as butter, cream, pure olive oil, and crisp bacon. Beef juice, eggs, and milk should be taken freely. In order not to impair digestion by overloading the stomach, only a small quantity of food should be taken at a time, but if properly arranged, the menu for the day may easily include a dozen eggs and a quart or more of milk. Peptonized milk gruel is excellent, also other soups, all kinds of fish, rare meats, farinaceous foods, milk and egg desserts, cocoa, chocolate, and almost every kind of table drinks to which the patient is accustomed. Fried foods, salt fish, and the coarser vegetables should be avoided.

Common sense valuable:

Common sense is an important adviser in dieting for disease. Rules are made to be broken in particular instances and to be modified in others. The progress of the disease, the existence of complications, the patient's natural or hereditary tendencies — all these should influence the diet. Compromise is often necessary, and in this a large amount of the common sense that instructs the nurse, amateur or professional, what to do in an emergency or in a given situation is more valuable than any amount of training.

NOTE: A large number of the dishes required for invalid cookery has been given in the preceding lessons. Only those that have not been so given will be noted here.

Lesson LXVIII

Calf's-Foot Jelly

Materials used:

1 calf's-foot
3½ pt cold water
3 tb lemon juice
½ c sugar
3 egg whites and shells

Utensils needed:

2-quart granite iron kettle
measuring utensils
wooden spoon
1 yd fine cheesecloth
fine strainer
molds

Operations:

1. Place the calf's-foot in 3 pt water. Bring this slowly to the boiling point and boil five hours. (This may be done previous to the lesson hour.)

2. Strain after reheating, and let it stand in a cold place until it is firm. Remove the fat.

3. Mix 1 c cold water, the whites and shells of the eggs with the sugar and lemon juice. Beat them well and add them to the jelly.

4. Heat the mixture, stirring constantly, but do not allow it to boil.

5. Strain several times through double thicknesses of the cheesecloth placed in a fine strainer.

6. Pour into molds. Chill until jellied.

Principles:

The foot of the calf contains gelatinous tissue in large proportion, and therefore jellies easily without the aid of gelatin. By placing in cold water and bringing it slowly to the boiling point, the cells are gradually broken down and the juices and gelatins released. Long, slow boiling, or simmering, finally extracts every particle of the food material from the meat, leaving little besides the indigestible fibers. The shells of the eggs are added because the albumen next to the shell is apt to be dense and rich. Lemon juice gives a pleasant flavor.

Serving:

This jelly should be served in small portions with a light digestible cracker or wafer. Lay a small flower or sprig of green beside the jelly.

Cleaning up:

Wash and scald the measuring utensils, spoons, strainer, and kettle. Wash and scald the cheesecloth.

Lesson LXIX

Bran Muffins

Materials used:

½ c flour	½ c milk
½ tp soda	2½ tb molasses
¼ tp salt	1 egg
1 c bran	

Utensils needed:

Cup and spoons for measuring	mixing bowl
egg beater	muffin pans

Operations:

1. Mix the flour, soda, and salt.
2. Add the bran, molasses, and milk.
3. Add the egg well beaten.
4. Bake in buttered muffin pans.

Principles:

Bran is the outer covering of wheat and has only a slight nutritive value. But it is easily digested and serves to stimulate and aid in the digestion of other food materials after they have entered the intestinal tract. The other contents of the muffins possess nutritive value and the muffins are very palatable.

Serving:

Bran muffins should be served hot with either fresh fruit or cooked or preserved fruits, marmalades, or jellies.

Lesson LXX

Eggnog

Materials used:

1 egg
⅔ c milk
⅛ tp salt
2 tp sugar
1 tb vanilla or lemon or
¼ c strong coffee
crushed ice

Utensils needed:

Dover egg beater
measuring utensils
beating spoon
high tumbler

Operations:

1. Beat the white of the egg until it is fairly stiff, but not dry.
2. Beat the yolk with the egg beater; add the sugar, salt, and, very slowly, the flavoring selected.
3. Add the milk and white of egg and turn the mixture into the glass. Nutmeg may be grated over the top if it is palatable to the invalid.

Principles:

Eggnog can be taken by persons who require a great deal of nourishment, but are unable to digest heavier foods. The proportion of protein in the egg and milk and the stimulus furnished by the coffee, in case this is used, help to support a weak person through a period when a more solid food cannot be taken. Taken between meals, an eggnog assists in building up a system weakened or reduced by disease. The raw albumen taxes the digestive organs very slightly. The flavoring helps to make the drink palatable.

Serving:

Place the glass of eggnog on a server on which is a dainty doily. A long-handled spoon may be placed by the side of the glass.

Cleaning up:

Soak the egg beater in cold water with other egg-soiled utensils, including the tumbler in which the drink has been served.

When the egg material has been thoroughly loosened, wash and scald all the dishes used. Should the whole beater be laid in the water? Why?

Lesson LXXI

Invalid Wafers

Materials used:

1 c sweet cream
1 tb sugar
¼ tp salt
1 tp baking powder
Graham flour to make soft dough
½ c chopped figs or dates

Utensils needed:

Measuring cup and spoons
mixing bowl
kneading board
rolling pin
shallow baking pans

Operations:

1. Roll half the dough.
2. Spread it with chopped figs or dates.
3. Roll the other half and place it above the layer of fruit.
4. Cut the dough in strips.
5. Bake as cookies are baked.

Principles:

This is one of the most palatable of foods of the wafer type that is at the same time harmless to the invalid digestion. The sweet cream provides a shortening that is easily digested. The fruit aids rather than hinders the assimilation of the wafers. The marked palatability of the wafers commends them for use in cases of impaired appetite.

Serving:

These wafers are good eaten with chocolate or cocoa or served with an ordinary invalid meal. Serve hot.

Additional Recipes

Beef Tea

1 lb beef (round) 1 pt cold water ½ tp salt

Remove the fat and wipe the meat with a damp towel. Cut it into small pieces and put them in a canning jar. Add cold water and let it stand for half an hour. Place the jar on a trivet (a small metal stand with an alcohol lamp beneath) in a kettle which contains enough cold water to surround that in the jar. Heat the water very gradually to 140° F. Keep it at that temperature for two hours, then slowly increase the heat sufficiently to turn the tea a deep chocolate color. Add the salt, and pepper if desired. Never allow beef tea to boil either when making it or reheating it.

Fig. 77— Extensible Trivet

Albuminized Milk

White of 1 egg ⅛ tp salt
½ c cold water 2 tb cracked ice

Stir the white of egg sufficiently to dissolve the tenacity, using a silver fork. Add the ice, milk, and salt. Beat slightly.

Artificial Buttermilk

2 pt milk 1 pt water 1 lactone tablet

Dissolve the lactone tablet in a small amount of water. Combine the milk and water and add the dissolved tablet. Let it stand in a warm place until the milk begins to sour and then place it in the ice box. The buttermilk will be ready for use in about four hours. In making a fresh supply, ¼ c buttermilk may be substituted for the tablet.

Barley Water

1 tb barley flour ¼ tp salt
2 tb cold water 2 tb lemon juice
2 c boiling water 2 tp sugar

Blend the flour and cold water and add slowly to the boiling water, stirring constantly. Boil thirty minutes, then add the salt and flavoring. Strain.

Dry Toast

Cut stale bread in ¼-in. slices. If crusts are to be removed or toast shaped, do so before toasting. To prevent the toast's being soft inside, it may be dried in a slow oven or held some distance from the fire or placed on a steel-covered asbestos mat over a low gas flame. When sufficiently dry, the bread should be held nearer the flame and browned quickly. Serve immediately while the toast is tender.

Oatmeal Gruel

¼ c rolled oats
¼ tp salt
1½ c boiling water
½ c hot milk

Add the oats to the boiling salted water and boil five or ten minutes over the fire and then cook it in the double boiler two hours. Add the milk and reheat.

Orange Albumin

White of 1 egg
juice of 1 sour orange
3 tb crushed ice
sugar to taste

Beat the white of egg slightly; add the orange juice and crushed ice. Mix in a glass and sweeten to taste. Lemon may be used in place of the orange.

Rice Water

1 tb rice
1½ c cold water
¼ tp salt

Wash the rice, add the cold water, and let it stand thirty minutes. Boil in the same water until the rice is very soft. This will require about thirty minutes. Add the salt and strain. Cream may be added if desired.

Mutton Broth

1 lb mutton (lean)
1 pt water
¼ tp salt

Chop the mutton fine; add the water and let it stand on ice two or three hours. Cook for three hours over a slow fire; strain; cool; remove the fat; add the salt and serve either hot or cold.

Note: Additional broths, gruels and meat jellies may be made from other grain meals and meats with only slight variation from the above formulae.

Farina Gruel

½ tb farina
¾ c boiling water
½ c milk
1 egg yolk (or whole egg)
¼ tp salt

Boil the farina and water twenty minutes. Add the milk and eggs; season, and strain.

Arrowroot Porridge

2 tp arrowroot moistened with
4 tb cold milk
1 c hot milk

Cook in the double boiler until it has attained the consistency of cream.

Shredded Wheat Pudding

1 shredded wheat biscuit
1 c milk
2 tb sugar
⅛ tp salt
1 egg white
½ tp nutmeg

Roll the biscuit fine. Heat the milk in the double boiler; add the sugar, salt, and biscuit. Stir and cook ten minutes. Fold in the stiffly-beaten egg white. Add the nutmeg. Pour into the wet mold. Serve cold.

HOUSEHOLD ECONOMICS

Lesson LXXII

The Cost of Living

"Sixpence for the best lamb":

A page of accounts kept by the city of London in the year 1272 acts like a cool breeze on the heated brow of the anxious housewife of the year nineteen anything. When she reads that the dignified city of London fixed all prices for dealers so that they could not by any chance charge more than three half-pence for "the best hen," sixpence for "the best lamb," and that a goose was sold for five half-pence, she is apt to wish herself back in those times, even though ladies could not then read and did nothing all day long but embroider intricate designs on delicate fabrics.

Cost of living was not low:

But if she will search history she will learn that the poor in those days found it just as difficult as in these to buy meat — even more difficult. Money was scarce and correspondingly valuable. Now it is plentiful, but always just as plentiful are the difficulties of obtaining it. The cost of living seems always a little greater than the wherewithal to pay, and so the economic situation has not materially changed since Edward I was on the throne of England, even though we have to pay a hundred times as much for a goose as when one entire fat gander could be purchased for five half-pence, two dozen eggs for three pence and a sheep for five shillings. When Henry the Eighth was king of England, the cost of living had risen so that beef and pork were a half-penny the pound and veal three farthings.

If one feasts another starves:

It has always been noticeable that whenever the rich of any country have indulged themselves in great excess in eating

and drinking, the poor have had to go hungry. Gross indulgence has also invariably preceded the fall of a people, as is seen in the fall of Rome and the earlier decay of the Greeks.

National and individual economy:

Therefore it will be seen that the economics of the household are one with the economics of the nation and that the cook who invents new pies is less to be commended than the one who finds a way to reduce the cost of an old pie without spoiling its flavor.

Is the American woman extravagant?

The American housewife is not lazy. She is very energetic; but much of her energy has, for the past generation or two, been devoted to mismanagement of her household. Since educators have begun to turn their attention to household matters, there has been a change of attitude in the home. Now mothers are beginning to see the folly of training their daughters in music and painting and leaving them without the faintest smattering of kitchen knowledge. It is only a few years since girls were deemed ready to be married and to care for homes of their own as soon as they had completed a classical course and had music and drawing for a term of years. They faced the duties of the kitchen and the darning basket without a trace of preparation for these duties — almost the only inevitable tasks consequent on marriage. The results have been sometimes disastrous and always painful. They could not be otherwise.

Rising tide in household education:

We are fortunate in living in a period of important change. There is a rising tide in household education. Good housewifery is coming to occupy its proper place in the popular curriculum, and the girl graduate nowadays seldom feels like avoiding the sight of the kitchen range or shuddering when her eyes rest on the darning basket. She recalls with pleasure the days she spent cooking in school and the hours devoted to the art of sewing and darning. The movement towards household education may be the result of reaction, but it is based on a profound daily need.

Value of keeping accounts:

Rich as well as poor people suffer from lack of economy in the household. It is perhaps even more important for the woman with a large establishment to look after her accounts carefully than for the woman who manages a simpler household. However, it is a habit of the American business man to begin with modest means and gradually acquire a larger income. The mistress of his home will do well, therefore, to accustom herself to keeping systematic accounts while her household expenditures are modest. In the event of their growing larger, she will easily learn to manage both them and her household if she has been systematic from the beginning.

Value of practice:

The household economy learned by the girl at school does not fully equip her for the management of a home. Some practical experience is necessary. Other professions require such experience and why not the home? The young graduate from the medical college usually gets his practical experience as interne in a hospital. The lawyer goes into practical training as clerk in a law office before hanging out his own shingle. The young woman who has completed a course in household economics cannot do better than to enter immediately upon a supplementary course in her mother's kitchen. Even if she does not expect nor intend to have a household of her own; even if it is her intention to teach the science of cookery instead of practicing it, she will find a period of practical home cooking almost indispensable to her subsequent success.

Technical perfection comes with experience:

The immediate practice of home cookery, canning, and household management will enable the young woman to fix in her mind the principles of kitchen chemistry as they cannot be fixed in any other way. Merely in the preservation of foods, as the knowledge of how to keep milk from souring, fruits from fermentation, meats from decay, and all foods from danger of molding, the young woman who is trained in scientific cookery

has an immense advantage over her companions who lack such training. But her training will be of little use to her if she does not put it into frequent, if not continuous practice, thus keeping fresh the various branches of her household knowledge. It is possible to know a great deal about cookery without being able to cook well, just as it is possible to know a great deal about music without being able to play an instrument. In order to gain technical perfection in either art one must practice, practice, practice.

Lesson LXXIII

Business in the Household

How to buy:

The importance to the housewife of knowing what to buy and how to buy cannot be overestimated if any appreciable reduction in the cost of living is to be made. New York City has a committee known as The Mayor's Food Supply Committee, which has published a pamphlet on *What the Purchasing Public Should Know.* If there were hung in each kitchen the following excerpts made from this pamphlet and their presence there should induce the housewives to buy in accordance with these injunctions, great economy would result.

"No kitchen is complete without a good scale and a set of accurate dry and liquid measures.

Do not leave the trimmings of your meat with the butcher.

Keep your eye on the spring scales while the merchant is weighing your purchase.

Watch closely how the butcher handles a computing scale.

Buy for cash, buy in larger quantities, buy where you can do the best."

A few don'ts:

"Don't allow your grocer to weigh in the wooden butter dish when he is weighing your butter.

Don't buy in a careless manner. That is, always ask for whatever the commodity is *by a known weight or measure.*

Don't buy in small quantities if you can avoid it.

Don't mistake cheapness for economy.

Don't be afraid to carry a bundle, unless you are prepared and willing to stand the expense of having it delivered.

Don't gossip with your merchant while he is weighing your purchases, unless you have tested your purchases and found him honest.

Don't be ashamed to do your own purchasing.

Don't be afraid of your tradesman. If you believe he is giving you short weight or not the proper quality of goods, do not hesitate to insist upon your rights.

Don't leave your shopping until the last minute and then be in a hurry.

Don't neglect to test the weight of package goods at home and compare them with the weight of the same commodity purchased loose."

Buying vegetables:

The Food Supply Committee referred to above has also issued a leaflet giving instructions on buying vegetables. Some of these are as follows:

"In buying vegetables, select them yourself and see that they are fresh.

Buy potatoes by weight.

Never buy sprouting potatoes. Serious illness has been known to follow their use.

In buying potatoes, ask your dealer to cut one in halves. Take the two halves and put them together; if they are juicy enough to stick together you have a good potato.

In buying cabbages, get a hard, heavy head with crisp, white leaves and with the stalk cut close to the head.

In buying beets, choose those with dirty roots and fresh, green leaves.

In buying winter squash, choose one that has no soft spots. Choose a medium size.

In buying cauliflower, choose a firm, white head with fresh, green leaves.

In buying onions, be sure that they are firm and hard. In buying celery, choose a bunch with white, crisp leaves. Use the outside pieces for soup and the inside pieces for the table."

Planning household expenses:

Sometimes the whole, but always a large part of the income of the head of the family is used in providing shelter, clothing, and food. Many men have been ruined through failure on the part of those managing the household expenses to plan wisely and to spend money economically. There is a very old saying that is a very true one, "Some women can throw out of the back door more than any man can bring in at the front door." Waste of anything that will maintain life and give physical comfort to human beings is a social crime.

Much waste in the management of the household is occasioned by ignorance rather than by carelessness. Ignorance of just where the money goes because of failure to keep accounts is one of the chief causes of waste. It is not at all necessary to keep such a set of books as a bookkeeper would in a store or in a factory, but a few simple accounts carefully kept will enable one to see where the money is being expended, and a study of the same will often show how to economize and how to eliminate waste.

The budget:

The establishment of a budget is one of the best schemes for curtailing unnecessary expense. A budget is merely a careful estimate of the amount of money required to carry out any project. For instance, a certain family at the beginning of the year made up the following budget of household expenses:

Food	$405	
Rent	171	
Clothing	132	
Fuel and Light	46	
Insurance	23	
Doctor and Dentist	25	
Car Fare	12	
Incidentals	90	$904

The total budget is $904. It may be, for unforeseen reasons, the household expenses cannot be held within the budget, but if that be true, the experience will be a valuable one for the purpose of making the budget for the next year. One of the most interesting and valuable games a family can play is that of "beating the budget." If each member of the family enters into the spirit of the game with the purpose of reducing expenses so that at the end of the year there is a balance, the effort in saving and the habit formed are worth all the sacrifice made. To make all interested, each member of the household should know of the expenses day by day so as to figure out how the game is progressing. To do this, the expenditures must be classified and a simple account kept with each division. Some of these divisions should be still further divided and separate accounts kept with each subdivision.

In order to know how expenses in Food are running, this may be divided as follows:

Food
- Meats
- Fish and Oysters
- Milk, Butter, and Cream
- Eggs
- Flour and Baking Goods
- Cereals
- Fruits
- Sundries

Under the head Sundries will come all food items that are not accounted for under other heads, such as sugar, sirup, spices, salt, and pepper. The keeping of such accounts will give information which is often quite surprising and may enable one to cut down some expenses with little hardship to the family.

PROBLEMS

1. Make an annual budget, as illustrated, for a family of five when the head of the family gets a salary of $2000 a year.

2. Make a similar budget for a laboring man with five small children if he earns $2.00 a day.

3. Make an annual budget for a school teacher having to support a wife, two children, aged 7 and 14 years, and a maiden aunt. His salary is $100 a month for nine months.

4. Make an annual budget for your own family or of some family with whose expenditures you are familiar. Remember that the budget must contain all the necessary expenses of the household.

Lesson LXXIV

Household Accounts

Account items:

After the budget is made, accounts may be opened with the several heads selected to represent the different items in the

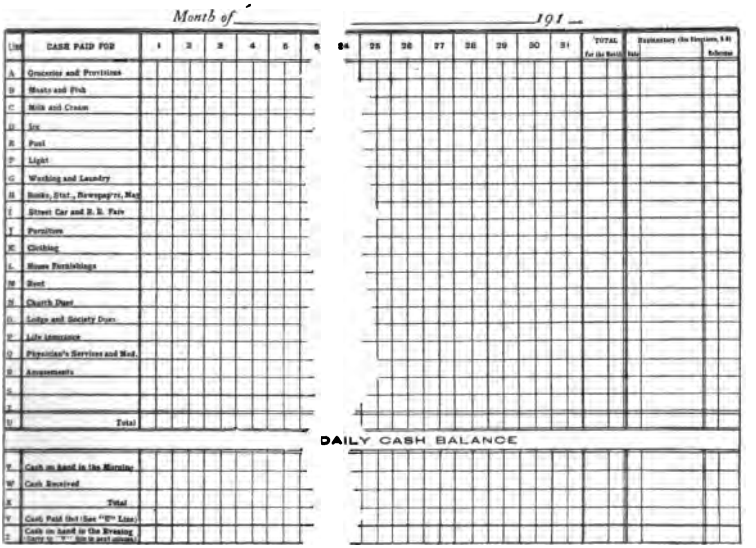


FIG. 78.— Page from Holtkamp's Household Accounts

budget. Any blank book may be ruled to receive such accounts or a blank book may be bought that is already so ruled.

The best plan, however, is to secure a wooden or pasteboard box of proper size to hold a series of cards on which the ac-

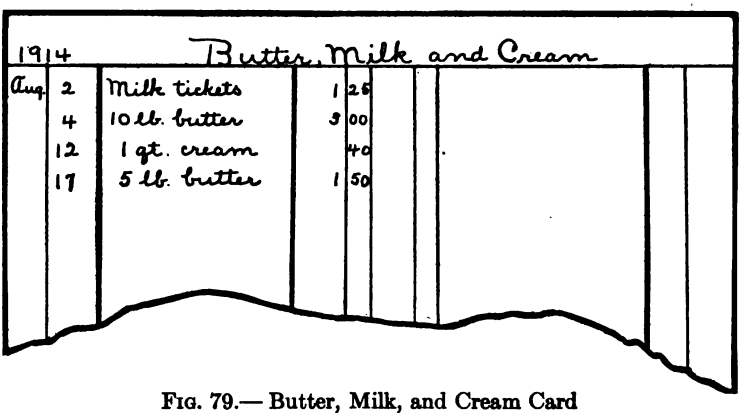


FIG. 79.— Butter, Milk, and Cream Card

counts may be kept. A separate card is used for each account. These cards are of standard size, 6 in. x 4 in., and are perforated on the lower edge to permit of their being slipped on a rod which runs from the front to the back of the box.

A box made of oak 5½ by 15 inches to hold the cards may be obtained at any office-supply store for $1.25, and a set of cards suitably ruled may be obtained for 50¢.

The card system has many advantages over the book system:

1. It is elastic. You may have many accounts or few and just the accounts you wish.

2. The account desired may be found instantly.

3. The old accounts may be removed and filed away, leaving nothing but current accounts to deal with.

4. Many other household records may be kept in the same box with the accounts, such as lists of linen, silverware, dishes, sizes of shoes, hosiery and gloves, canned fruits, dates of births and anniversaries, records of gifts, records of physician's, dentist's and oculist's services, addresses, calls, and tried recipes.

EXERCISE

Obtain a blank book or a box with a set of ruled cards as suggested, and keep one month's record of the family whose annual budget was given on page 263, total, $904. Under the head *Food*, keep separate accounts as suggested on the preceding page.

Sales slips were received for purchases made as follows:

Aug. 1. At Dry Goods Store:

12 yd. cheesecloth @ 10¢	$1.20
4 yd. cambric @ 15¢	.60
4 spools thread @ 5¢	.20
	$2.00

At Grocery: Milk, 5¢; bread, 5¢; 1 pkg. cornflakes, 10¢; 2 pkg. Dromedary dates, 25¢; rolls, 5¢; coffee, 35¢.

At Meat Shop: 5 lb. rib roast, 60¢; 3 lb. sausages, 30¢; 2 lb. bacon, 30¢.

Paid rent for past month, $18; electric light bill, $1.74; gas bill, $2.28; daily paper bill, 50¢.

FIG. 80.— Card-filing Box

Aug. 2. Bought milk tickets, $1.25; cream tickets, $2.00.

Bought at Grocery: Brown sugar, 25¢; tomatoes, 10¢; rolls, 10¢; bread, 5¢; flour, $1.50.

Paid insurance premium on household furniture, $3.00.

Paid carfare and incidentals, 75¢.

Aug. 3. Bought at Grocery: Jelly roll, 10¢; shredded wheat, 25¢; sugar, 25¢; peaches, 25¢.

Aug. 4. Bought at Meat Market: Round steak, 40¢; 1 qt. oysters, 35¢.

Bought at Grocery: 1 doz. doughnuts, 10¢; 1 doz. pears, 25¢; 2 loaves bread, 10¢; 1 can peaches, 25¢; 1 lb. butter, 33¢; 1 doz. eggs, 26¢; 1 can salmon, 25¢; tomatoes, 5¢.

Aug. 6. Bought at Grocery: Lemons, ½ doz., 20¢; bread, 5¢; 1 lb. butter, 33¢; 1 doz. eggs, 26¢; 1 pkg. mother's oats, 15¢; ½ doz. bananas, 20¢; ½ doz. pears, 20¢; 1 doz. rolls, 10¢; 4 loaves bread, 20¢.

Paid dentist's bill, $7.50.

Aug. 7. Bought at Grocery: 1 pkg. cornflakes, 10¢; bread, 5¢; rolls, 5¢; coffee, 30¢; sugar, 50¢; butter, 35¢; dates, 25¢; grapes, 10¢.

Paid telephone bill, 50¢.

Bought at Meat Market: 4 lb. liver, 20¢; 5 lb. steak, $1.00; 3 lb. lard, 30¢.

Aug. 8. Bought at Grocery: ½ doz. bananas, 20¢; 7 lb. apples, 30¢; 2 pkg. dates, 25¢; 1 pkg. shredded wheat, 13¢.

Bought at Dry Goods Store: 4 yd. ribbon, 40¢; 3 papers pins, 15¢; 5 yd. silk, $1.25; 1 pr. gloves, $1.50.

Paid ice bill for July, $2.50.

Aug. 9. Bought at Grocery: 4 loaves bread, 20¢; 2 bu. potatoes, $1.25.

Aug. 10. Bought at Grocery: Rolls, 10¢; bananas, 20¢; ½ doz. lemons, 20¢; 1 lb. butter, 40¢; 2 pkg. dates, 25¢; 4 loaves bread, 20¢; brown sugar, 50¢; 1 pkg. yeast, 2¢; dried beef, 25¢.

Aug. 11. Bought at Meat Market: 4 lb. Hamburg steak, 60¢; 3 lb. bacon, 60¢.

Bought at Grocery: Salmon, 25¢; chocolate, 40¢.

Aug. 13. Bought at Grocery: Salmon, 25¢; cheese, 29¢; salt, 5¢; soap, 20¢; coffee, 32¢.

Paid doctor's bill, $2.00; carfare and incidentals, 40¢.

Aug. 14. Paid dressmaker, $12.00.
Bought of huckster: Cabbage, 25¢; beets, 40¢; onions, 20¢.
Bought at Grocery: Flour, 45¢; bananas, 20¢; apples, 30¢; doughnuts, 6¢; pineapple, 25¢; bread, 5¢; grapefruit, 20¢.

Aug. 15. Paid for tickets to concert, $2.00. Paid for load of kindling, $3.50. Bought 1 pr. shoes, $3.00.

Aug. 16. Bought at Grocery: Bread, 10¢; yeast, 5¢; mother's oats, 15¢; dates, 25¢; apples, 30¢; bananas, 10¢; bread, 5¢; sugar, $1.00; tea, 40¢.
Bought at Meat Market: 3 lb. mutton chops, 50¢; 2 lb. sausage, 25¢.

Aug. 18. Bought umbrella, $1.25; boy's cap, 75¢; rubbers, 75¢. Paid carfare, 20¢; $2.00 for incidentals.

Aug. 19. Paid subscription to magazine, $1.00. Paid church dues, $2.50; picnic expenses, $3.50.

Aug. 20. Bought at Grocery: 4 loaves bread, 20¢; dates, 25¢; shredded wheat, 25¢; 1 pail lard, 55¢; 2 loaves bread, 10¢; 1 pkg. mother's oats, 15¢; 1 can salmon, 25¢.

Aug. 21. Bought at Grocery: Dates, 25¢; shredded wheat, 25¢; 1 doz. bananas, 20¢.

Aug. 22. Bought at Hardware Store: 1 hammer, 25¢; 5 pie tins, 25¢; 2 mouse-traps, 5¢; 1 dipper, 10¢.
Bought at Meat Market: 5 lb. sirloin steak, $1.25.

Aug. 23. Bought at Grocery: Cornflakes, 10¢; bread, 5¢; dates, 25¢; rolls, 5¢.

Aug. 25. Bought milk tickets, $1.25; 5 lb. butter, $1.50.
Bought at Grocery: Dates, 25¢; bread, 10¢; ½ doz. oranges, 18¢; bananas, 25¢; dried beef, 15¢; cream of wheat, 25¢.

Aug. 26. Bought at Grocery: Grapes, 50¢; coffee, 35¢.

Aug. 27. Expenses of trip to the lake, $3.35.

Aug. 28. Bought at Grocery: Salmon, 25¢; sugar, 25¢; matches, 10¢.

Aug. 29. Bought at Meat Market: 5 lb. pork roast, $1.00; 2½ lb. Hamburg steak, 25¢.
Bought at Grocery: Baking powder, 25¢; 4 loaves bread, 20¢; 2 lb. butter, 70¢; dates, 13¢; shredded wheat, 25¢.

Aug. 30. Repair of gas stove, 50¢.
Bought 1 gal. ice cream, $1.00.
Bought at Dry Goods Store: 1 pr. socks, 25¢; 1 boy's suit, $5.00.

Aug. 31. Bought at Grocery: Bread, 5¢; salmon, 18¢; coffee, 35¢; silver polish, 10¢.

NOTE. These sales slips may hang on a hook in the kitchen till you have time to record them on the cards. Classify the items and as they are recorded, check them off on the slips so as to make certain that none is omitted.

After the accounts are made up, compare with the annual budget and determine whether in your judgment the budget is being exceeded in any department.

Lesson LXXV

PAYING ACCOUNTS

At the end of the month, a statement of your account may be received from the grocer, the butcher, and the drygoods merchant. These statements may appear as follows:

STATEMENT 1

....., 19....

M.....

In account with

.....(Grocer).

Aug.	1	To Mdse		85
"	4	" "	1	59

STATEMENT 2

....., 19.....

M.....

In account with

.....(Butcher).

Aug.	1	To Mdse	1	20
"	4	" "		75

STATEMENT 3

....., 19.....

M.....

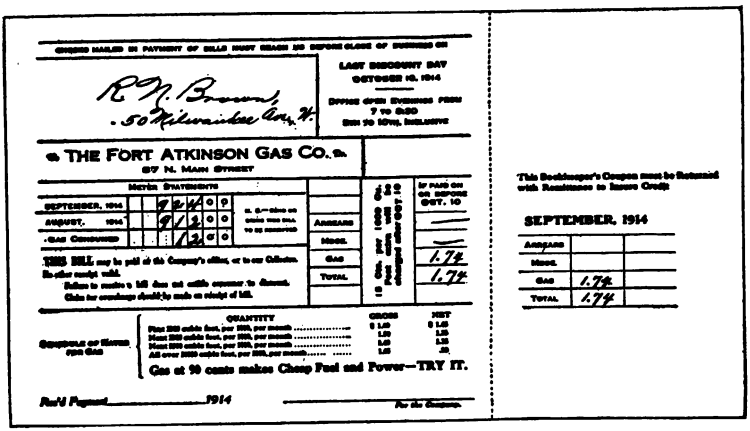
In account with

.....(Dry Goods Merchant).

Aug.	1	To Mdse	2	00
"	8	" "	3	30

The statement of the grocer, the butcher, and the dry goods merchant should be compared with the sales slips on hand for the month to see that the items are correct. If they are found to be all right, you may take money and go to the several stores and offices and pay what is due. It is well to take the statements with you and have them receipted. The cashier or shopkeeper writes "Paid" at the bottom of the statement and signs his name. The larger stores and offices have a stamp which they use, marking "Paid" with the date.

You may also receive the gas bill and the electric light bill, as follows:



THE FORT ATKINSON GAS CO.
207 N. MAIN STREET

SEPTEMBER, 1914
AUGUST, 1914
GAS CONSUMED
7 1/2 0 0
7 1/2 0 0
1 2 0 0

LAST DISCOUNT DAY OCTOBER 10, 1914

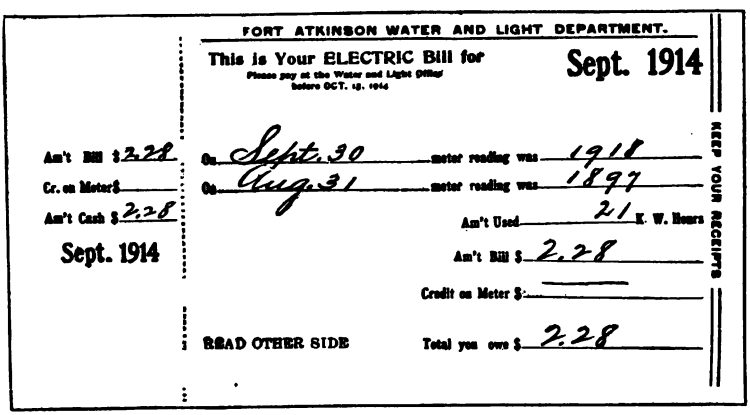
GAS 1.7¢
TOTAL 1.7¢

Gas at 90 cents makes Cheap Fuel and Power—TRY IT.

This Bookkeeper's Coupon must be Returned with Remittance to Insure Credit

SEPTEMBER, 1914
GAS 1.7¢
TOTAL 1.7¢

FIG. 81.— Gas Bill



FORT ATKINSON WATER AND LIGHT DEPARTMENT.

This is Your ELECTRIC Bill for Sept. 1914

Please pay at the Water and Light Office before OCT. 15, 1914

Am't Bill $2.28
Cr. on Meter $
Am't Cash $2.28

Sept. 1914

On Sept. 30 meter reading was 1918
On Aug. 31 meter reading was 1897
Am't Used 21 K. W. Hours
Am't Bill $ 2.28
Credit on Meter $
Total you owe $ 2.28

READ OTHER SIDE

KEEP YOUR RECEIPTS

FIG. 82.— Electric Light Bill

Keeping and filing receipts:

It is a safe rule never to fail to take a receipt for money paid. It is even better to get the receipted statement. All receipts and receipted statements should be carefully preserved,

so that if payment should be demanded again, you have on hand some evidence of payment.

A good filing case for receipts as well as for bills and business letters is an ordinary business letter file, as shown herewith. This file has alphabet divisions that make it very convenient and it need not cost more than 35 cents.

FIG. 83.—Filing Case for Receipts

Paying by check:

Although one may pay small accounts, especially such as are less than $1.00, with cash from the purse, it is far better and safer to deposit money in the bank and then make all payments by means of checks. Many large banks have a women's department where business is transacted with women only. All banks are glad to accept the deposits of women —the larger the deposit kept in the bank the better they like it.

How to make a deposit:

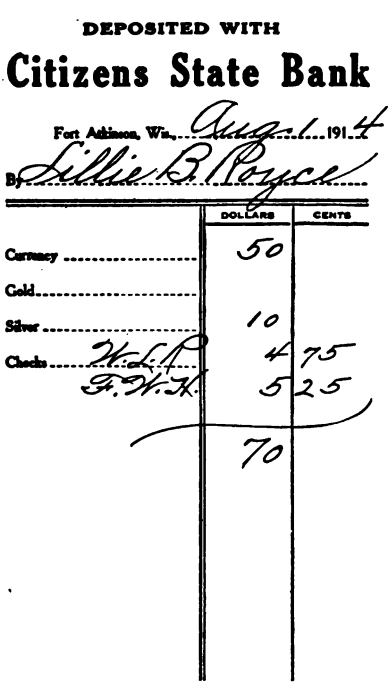
Go to the bank with the money you wish to deposit. On the desks in the bank you will find placed there for the use of the public, some blank deposit slips.

If you deposit $50.00 in bills, $10.00 in silver, and two checks, W. L. R.'s, for $4.75, and F. W. H.'s, for $5.25, the deposit slip will appear as shown on page 274.

Take this deposit slip with the money to the Receiving Teller, and ask if you may open a checking account. If permission be given, the teller will receive your deposit slip and money and will ask you to sign your name on a card or in a signature book so that the bank may have your name in your own handwriting

as it will appear on your checks. Care should be taken to sign your name but one way on all business papers.

The teller will then give you a pass book, in which all your deposits are to be entered as they are made, and also a check book. The check book consists of a number of blanks on which you may write your checks. It also has stubs attached on which a record of each check should be placed as the check is issued.


DEPOSITED WITH

Citizens State Bank

Fort Atkinson, Wis., Aug. 1, 1914

By Lillie B. Royce

	DOLLARS	CENTS
Currency	50	
Gold		
Silver	10	
Checks W. L. P.	4	75
G. W. K.	5	25
	70	

FIG. 84.— Deposit Slip

Now as you have a deposit in the bank you may check against that deposit, but great care should be taken not to write checks for more money than you have on deposit at any time. In most states, laws have been passed making such an act a crime. It is, therefore, very important whenever a check is issued that you subtract the amount of the check from whatever amount you have left in the bank so that you may never overdraw your account. This little account is kept on the stub. It is better to make out the stub first and then make out the check; tear these apart at the perforations and give the check to the person that you owe.

Although it is best to obtain a receipt even when payment of an account is made by check, yet the check that is made out "or order" constitutes such a receipt. It must be signed on

the back by the one in whose favor it is drawn when he cashes it or passes it on in payment of some debt, so that it serves as a kind of receipt, or voucher, as it is called, when it is returned

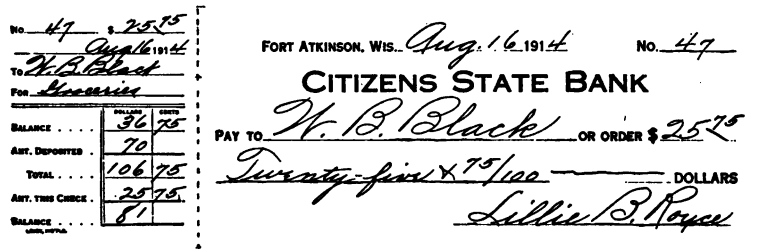

No. 47 $ 25.75
Aug 6 1914
To W. B. Black
For Groceries
Balance 36 75
Amt. Deposited . 70
Total 106 75
Amt. this Check . 25 75
Balance 81
Fort Atkinson, Wis. Aug. 6 1914 No. 47
CITIZENS STATE BANK
Pay to W. B. Black or order $ 25 75
Twenty-five & 75/100 ——— Dollars
Lillie B. Royce

Fig. 85.— Check with Stub

to you by the bank. Most banks make a monthly statement to each depositor and return to him his paid checks. The paid checks may be filed with the receipts or may be kept by themselves.

EXERCISES

1. Obtain some deposit slips and some blank checks from a bank or from the models here given make a number of blanks on plain paper, cutting the paper of the size ordinarily used for these blanks. Pin the blank checks together at the end to form a check book.

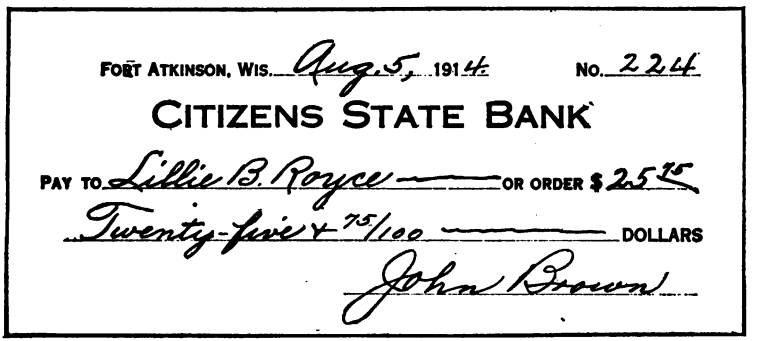

Fort Atkinson, Wis. Aug. 5, 1914 No. 224
CITIZENS STATE BANK
Pay to Lillie B. Royce ——— or order $ 25 75
Twenty-five & 75/100 ——— Dollars
John Brown

Fig. 86.— Check

2. Make a deposit of $150 in bills, $10 in silver, and a check for $25.75 given you by John Brown. Make out the deposit slip properly and hand

to the teacher as banker. Checks made in your favor must be endorsed before being deposited in the bank, as here shown:

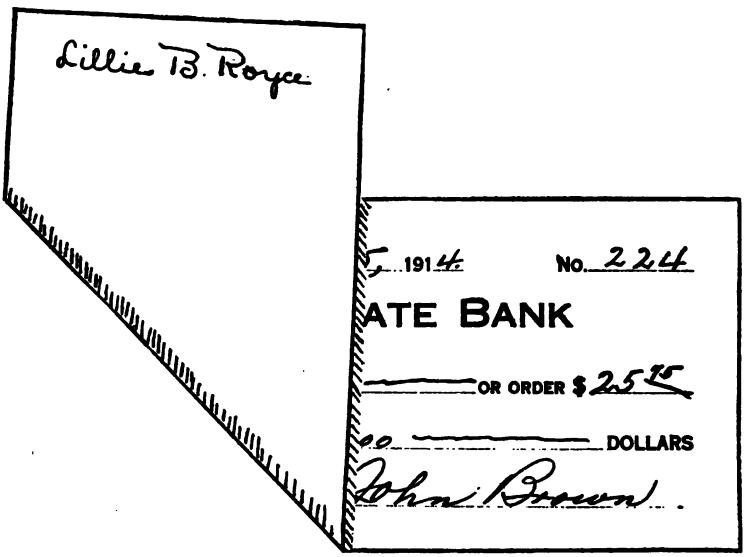


FIG. 87.— Endorsed Check

3. Put the amount of your deposit on the first stub of your check book and write checks in payment of the statements on pages 270 and 271. Hand the statements and checks to your teacher. The teacher will receipt the statements and return them to you.

4. Make a deposit of $25 in currency. Be sure to add it to your bank balance on the stub of the last check issued.

5. Pay the gas and electric light bills (page 272) by checks. Inclose these checks in envelopes properly addressed to the companies to be paid, together with copies of the bills. Hand to the teacher.

6. If you wish to obtain money for small accounts and current expenses, make a check payable to yourself, then go to the bank and cash it. Such checks may also be cashed at any store or business house where you do business and are known. If you obtain the money at the bank, it is customary to use the word "Self" or "Cash" instead of your name.

Write a check for $25.00 which you wish to cash at the bank to use in paying small accounts and expenses.

7. Suppose you were shopping at Yerxa Bros. and wished to buy 2 packages of Cereal for 25¢ and also to get $10 for general expense money.

FORT ATKINSON, WIS. Aug. 23 1914 No. 54

CITIZENS STATE BANK

PAY TO Self OR ORDER $ 25.00

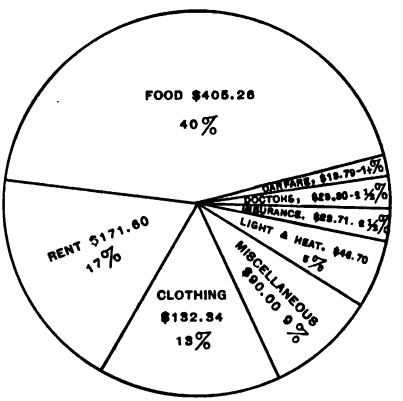
Twenty-five & no/100 DOLLARS

Lillie B. Royce

FIG. 88.— Check to Self

Make out a check covering both these items. Be careful in filling out the stub.

Estimated distribution of $1,000.00 income, family of five



It should be noted that the above proportion, which was established after very exhaustive investigation in New York, will not hold true for larger incomes. On a $2000 income, for instance, it is not likely that $810.52 would be spent for food.

Some convenient card records:

On the following pages are some forms which will show how serviceable card records may become in keeping the run of household matters.

Linen Record – Table-cloths

Size	Condition	Purchase-Date	Purchase-Place	Cost	
72 x 90	New, unbleached	Dec., 1913	A. Peck & Co.	1	75
72 x 72	Fair, bleached	Jan., 1912	Donaldson	2	50
72 x 108	Good, damask	Feb., 1913	Thomas	3	75
72 x 72	Darned	Mar., 1911	Mannheimer	2	25

Canned Fruits, Preserves, Pickles, etc.

Quantity	Description	Marks	Location	Marks of Cans Used
5 qt	Alberta peaches	1, 2, 3, 4, 5	Shelf c, back	3, 4
6 pt.	Pickled peaches	6, 7, 8, 9, 10, 11	Shelf c, 2d row	6
8 glasses	Currant jelly	12–19	Shelf b, front	
3 qt.	Pickled cucumbers	20–22	Shelf c, back	21

Baking Powder Griddle Cakes

Materials	Measure	Weight
Sweet milk	½ pt.	
flour	½ pt.	
salt	⅓ tp.	
sugar	1 tp.	
baking powder	1 tp.	
melted butter	2 tb.	

Directions

Mix all the dry ingredients and rub through a sieve.

Pour the milk upon them and beat well.

Add the butter and beat a minute longer.

Fry in small cakes on a griddle.

Remarks: Miss Parloa's recipe. Note the absence of eggs.

Time to prepare	Time to cook	Number served	Cost
5 min.	10 min.	4	8 cts.

FIG. 89.— Household Records

Dates of Births and Anniversaries

Name	Birth	Marriage	Other Important Events
Dexter B.	May 5, '80	June 9, 1906	Graduated 1898
Nella G.	Apr. 1, '87	Oct 4, 1914	Graduated 1904
Mac H.	July 6, '10		
Henry J.	Mar. 2, '92		

Sizes for Members of Family

Name	Shoes	Hose	Shirts	Collar	Cuff	Glove	Hat	Height	Weight	Chest	Waist	Leg
Father	9 B	11	16	16	11	8½	7	6'	160	37	36	34
Mother	5 C	9				6¼		5'4"	110	34	23	
Mary												
Thomas												
Henry												

Henry J.

Records of Services of Physicians, Dentists and Opticians.

Date	Operation or Illness	Dr. Attendance	Remarks
Mar., '96	Measles - light		In house 3 weeks
Feb 7, '97	Vaccinated	Dr. Brown	Worked well
Jan., '98	Scarlet fever	Dr. Roberts	Impaired hearing
Apr. 8, '99	Tonsils removed	" "	Improved health
July 9, '99	Right eye tooth removed	Dr. Hendryx	All other teeth sound

FIG. 90.— Household Records

APPENDIX

Approximate Composition of One Pound Each of Common American Food Products

Food Materials (as purchased)	Refuse	Water	Protein	Fat	Carbohydrates	Ash	Fuel value per pound
ANIMAL FOOD							
Beef, fresh:	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Calories.*
Chuck ribs	16.3	52.6	15.5	15.0	.....	0.8	910
Flank	10.2	54.0	17.0	19.0	.....	.7	1,105
Loin	13.3	52.5	16.1	17.5	.....	.9	1,025
Porterhouse steak	12.7	52.4	19.1	17.9	.....	.8	1,100
Sirloin steak	12.8	54.0	16.5	16.1	.....	.9	975
Neck	27.6	45.9	14.5	11.9	.....	.7	1,165
Ribs	20.8	43.8	13.9	21.2	.....	.7	1,135
Rib rolls	.....	63.9	19.3	16.7	.....	.9	1,055
Round	7.2	60.7	19.0	12.8	.....	1.0	890
Rump	20.7	45.0	13.8	20.2	.....	.7	1,090
Shank, fore	36.9	42.9	12.8	7.3	.....	.6	545
Shoulder and clod	16.4	56.8	16.4	9.8	.....	.9	715
Fore quarter	18.7	49.1	14.5	17.5	.....	.7	995
Hind quarter	15.7	50.4	15.4	18.3	.....	.7	1,045
Beef, corned, canned, pickled, and dried:							
Corned beef	8.4	49.2	14.3	23.8	.....	4.6	1,245
Tongue, pickled	6.0	58.9	11.9	19.2	.....	4.3	1,010
Dried, salted, and smoked	4.7	53.7	26.4	6.9	.....	8.9	790
Canned boiled beef	.....	51.8	25.5	22.5	.....	1.3	1,410
Canned corned beef	.....	51.8	26.3	18.7	.....	4.0	1,270
Veal:							
Breast	21.3	52.0	15.4	11.0	.....	.8	745
Leg	14.2	60.1	15.5	7.9	.....	.9	625
Leg cutlets	3.4	68.3	20.1	7.5	.....	1.0	695
Fore quarter	24.5	54.2	15.1	6.0	.....	.7	535
Hind quarter	20.7	56.2	16.2	6.6	.....	.8	580
Mutton:							
Flank	9.9	39.0	13.8	36.9	.....	.6	1,770
Leg, hind	18.4	51.2	15.1	14.7	.....	.8	890
Loin chops	16.0	42.0	13.5	28.3	.....	.7	1,415
Fore quarter	21.2	41.6	12.3	24.5	.....	.7	1,235
Hind quarter, without tallow	17.2	45.4	13.8	23.2	.....	.7	1,210
Lamb:							
Breast	19.1	45.5	15.4	19.1	.....	.8	1,075
Leg, hind	17.4	52.9	15.9	13.6	.....	.9	860
Pork, fresh:							
Ham	10.7	48.0	13.5	25.9	.....	.8	1,320
Loin chops	19.7	41.8	13.4	24.2	.....	.8	1,245
Shoulder	12.4	44.9	12.0	29.8	.....	.7	1,450
Tenderloin	.....	66.5	18.9	13.0	.....	1.0	895
Pork, salted, cured, and pickled:							
Ham, smoked	13.6	34.8	14.2	33.4	.....	4.2	1,635
Shoulder, smoked	18.2	36.8	13.0	26.6	.....	5.5	1,335
Salt pork	.....	7.9	1.9	86.2	.....	3.9	3,555
Bacon, smoked	7.7	17.4	9.1	62.2	.....	4.1	2,715

Food Materials (as purchased)	Refuse	Water	Protein	Fat	Carbohydrates	Ash	Fuel value per pound
ANIMAL FOOD—Continued	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Calories*
Sausage:							
Bologna	3.3	55.2	18.2	19.7	.....	3.8	1,155
Pork	.....	39.8	13.0	44.2	1.1	2.2	2,075
Frankfort	.....	57.2	19.6	18.6	1.1	3.4	1,155
Soups:							
Celery, cream of	.....	88.6	2.1	2.8	5.0	1.5	235
Beef	.....	92.9	4.4	.4	1.1	1.2	120
Meat stew	.....	84.5	4.6	4.3	5.5	1.1	365
Tomato	.....	90.0	1.8	1.1	5.6	1.5	185
Poultry:							
Chicken, broilers	41.6	43.7	12.8	1.4	.....	.7	305
Fowls	25.9	47.1	13.7	12.3	.....	.7	765
Goose	17.6	38.5	13.4	29.8	.....	.7	1,475
Turkey	22.7	42.4	16.1	18.4	.....	.8	1,060
Fish:							
Cod, dressed	29.9	58.5	11.1	.2	.....	.8	220
Halibut, steaks or sections	17.7	61.9	15.3	4.4	.....	.9	475
Mackerel, whole	44.7	40.4	10.2	4.2	.....	.7	370
Perch, yellow, dressed	35.1	50.7	12.8	.7	.....	.9	275
Shad, whole	50.1	35.2	9.4	4.8	.....	.7	380
Shad, roe	.....	71.2	20.9	3.8	2.6	1.5	600
Fish, preserved:							
Cod, salt	24.9	40.2	16.0	.4	.....	18.5	325
Herring, smoked	44.4	19.2	20.5	8.8	.....	7.4	755
Fish, canned:							
Salmon	.....	63.5	21.8	12.1	.....	2.6	915
Sardines	*5.0	53.6	23.7	12.1	.....	5.3	950
Shellfish:							
Oysters, "solids"	.....	88.3	6.0	1.3	3.3	1.1	225
Clams	.....	80.8	10.6	1.1	5.2	2.3	340
Crabs	52.4	36.7	7.9	.9	.6	1.5	200
Lobsters	61.7	30.7	5.9	.7	.2	.8	145
Eggs: Hen's eggs	*11.2	65.5	13.1	9.3	.....	0.9	635
Dairy products, etc:							
Butter	.....	11.0	1.0	85.0	.....	3.0	3,410
Whole milk	.....	87.0	3.3	4.0	5.0	.7	310
Skim milk	.....	90.5	3.4	.3	5.1	.7	165
Buttermilk	.....	91.0	3.0	.5	4.8	.7	160
Condensed milk	.....	26.9	8.8	8.3	54.1	1.9	1,430
Cream	.....	74.0	2.5	18.5	4.5	.5	865
Cheese, Cheddar	.....	27.4	27.7	36.8	4.1	4.0	2,075
Cheese, full cream	.....	34.2	25.9	33.7	2.4	3.8	1,885
VEGETABLE FOOD							
Flour, meal, etc.:							
Entire-wheat flour	.....	11.4	13.8	1.9	71.9	1.0	1,650
Graham flour	.....	11.3	13.3	2.2	71.4	1.8	1,645
Wheat flour, patent roller process—							
High-grade and medium	.....	12.0	11.4	1.0	75.1	.5	1,635
Low grade	.....	12.0	14.0	1.9	71.2	.9	1,640
Macaroni, vermicelli, etc	.....	10.3	13.4	.9	74.1	1.3	1,645
Wheat breakfast food	.....	9.6	12.1	1.8	75.2	1.3	1,680
Buckwheat flour	.....	13.6	6.4	1.2	77.9	.9	1,605
Rye flour	.....	12.9	6.8	.9	78.7	.7	1,620
Corn meal	.....	12.5	9.2	1.9	75.4	1.0	1,635
Oat breakfast food	.....	7.7	16.7	7.3	66.2	2.1	1,800
Rice	.....	12.3	8.0	.3	79.0	.4	1,620
Tapioca	.....	11.4	.4	.1	88.0	.1	1,650
Starch	.....	.....	.....	.....	90.0	.....	1,675

* Refuse, oil.
* Refuse, shell.

FOOD MATERIALS (as purchased)	Refuse	Water	Protein	Fat	Carbohydrates	Ash	Fuel value per pound
VEGETABLE FOOD—Continued	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Calories*
Bread, pastry, etc.:							
White bread	.....	35.3	9.2	1.3	53.1	1.1	1,200
Brown bread	.....	43.6	5.4	1.8	47.1	2.1	1,040
Graham bread	.....	35.7	8.9	1.8	52.1	1.5	1,195
Whole-wheat bread	.....	38.4	9.7	.9	49.7	1.3	1,130
Rye bread	.....	35.7	9.0	.6	53.2	1.5	1,170
Cake	.....	19.9	6.3	9.0	63.3	1.5	1,630
Cream crackers	.....	6.8	9.7	12.1	69.7	1.7	1,925
Oyster crackers	.....	4.8	11.3	10.5	70.5	2.9	1,910
Soda crackers	.....	5.9	9.8	9.1	73.1	2.1	1,875
Sugars, etc.:							
Molasses	.....	.....	.....	.....	70.0	.....	1,225
Candy†	.....	.....	.....	.....	96.0	.....	1,680
Honey	.....	.....	.....	.....	81.0	.....	1,420
Sugar, granulated	.....	.....	.....	.....	100.0	.....	1,750
Maple sirup	.....	.....	.....	.....	71.4	.....	1,250
Vegetables:‡							
Beans, dried	.....	12.6	22.5	1.8	59.6	3.5	1,520
Beans, Lima, shelled	.....	68.5	7.1	.7	22.0	1.7	540
Beans, string	7.0	83.0	2.1	.3	6.9	.7	170
Beets	20.0	70.0	1.3	.1	7.7	.9	160
Cabbage	15.0	77.7	1.4	.2	4.8	.9	115
Celery	20.0	75.6	.9	.1	2.6	.8	65
Corn, green (sweet), edible portion	.....	75.4	3.1	1.1	19.7	.7	440
Cucumbers	15.0	81.1	.7	.2	2.6	.4	65
Lettuce	15.0	80.5	1.0	.2	2.5	.8	65
Mushrooms	.....	88.1	3.5	.4	6.8	1.2	185
Onions	10.0	78.9	1.4	.3	8.9	.5	190
Parsnips	20.0	66.4	1.3	.4	10.8	1.1	230
Peas (*Pisum sativum*), dried	.....	9.5	24.6	1.0	62.0	2.9	1,565
Peas (*Pisum sativum*), shelled	.....	74.6	7.0	.5	16.9	1.0	440
Cowpeas, dried	.....	13.0	21.4	1.4	60.8	3.4	1,505
Potatoes	20.0	62.6	1.8	.1	14.7	.8	295
Rhubarb	40.0	56.6	.4	.4	2.2	.4	60
Sweet potatoes	20.0	55.2	1.4	.6	21.9	.9	440
Spinach	.....	92.3	2.1	.3	3.2	2.1	95
Squash	50.0	44.2	.7	.2	4.5	.4	100
Tomatoes	.....	94.3	.9	.4	3.9	.5	100
Turnips	30.0	62.7	.9	.1	5.7	.6	120
Vegetables, canned:							
Baked beans	.....	68.9	6.9	2.5	19.6	2.1	555
Peas (*Pisum sativum*), green	.....	85.3	3.6	.2	9.8	1.1	235
Corn, green	.....	76.1	2.8	1.2	19.0	.9	430
Succotash	.....	75.9	3.6	1.0	18.6	.9	425
Tomatoes	.....	94.0	1.2	.2	4.0	.6	95
Fruits, berries, etc., fresh:*							
Apples	25.0	63.3	0.3	0.3	10.8	0.3	190
Bananas	35.0	48.9	.8	.4	14.3	.6	260

† Plain confectionery not containing nuts, fruit, or chocolate.

‡ Such vegetables as potatoes, squash, beets, etc., have a certain amount of inedible material, skin, seeds, etc. The amount varies with the method of preparing the vegetables, and can not be accurately estimated. The figures given for refuse of vegetables, fruits, etc., are assumed to represent approximately the amount of refuse in these foods as ordinarily prepared.

* Fruits contain a certain proportion of inedible materials, as skin, seeds, etc., which are properly classed as refuse. In some fruits, as oranges and prunes, the amount rejected in eating is practically the same as refuse. In others, as apples and pears, more or less of the edible material is ordinarily rejected with the skin and seeds and other inedible portions. The edible material which is thus thrown away, and should properly be classed with the waste, is here classed with the refuse. The figures for refuse here given represent, as nearly as can be ascertained, the quantities ordinarily rejected.

Food Materials (as Purchased)	Refuse	Water	Protein	Fat	Carbohydrates	Ash	Fuel value per pound
VEGETABLE FOOD—Continued	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Calories*
Grapes	25.0	58.0	1.0	1.2	14.4	.4	295
Lemons	30.0	62.5	.7	.5	5.9	.4	125
Muskmelons	50.0	44.8	.3	.....	4.6	.3	80
Oranges	27.0	63.4	.6	.1	8.5	.4	150
Pears	10.0	76.0	.5	.4	12.7	.4	230
Persimmons, edible portion	.....	66.1	.8	.7	31.5	.9	550
Raspberries	.....	85.8	1.0	.....	12.6	.6	220
Strawberries	5.0	85.9	.9	.6	7.0	.6	150
Watermelons	59.4	37.5	.2	.1	2.7	.1	50
Fruits, dried:							
Apples	.....	28.1	1.6	2.2	66.1	2.0	1,185
Apricots	.....	29.4	4.7	1.0	62.5	2.4	1,125
Dates	10.0	13.8	1.9	2.5	70.6	1.2	1,275
Figs	.....	18.8	4.3	.3	74.2	2.4	1,280
Raisins	10.0	13.1	2.3	3.0	68.5	3.1	1,265
Nuts:							
Almonds	45.0	2.7	11.5	30.2	9.5	1.1	1,515
Brazil nuts	49.6	2.6	8.6	33.7	3.5	2.0	1,485
Butternuts	86.4	.6	3.8	8.3	.5	.4	385
Chestnuts, fresh	16.0	37.8	5.2	4.5	35.4	1.1	915
Chestnuts, dried	24.0	4.5	8.1	5.3	56.4	1.7	1,385
Cocoanuts	†48.8	7.2	2.9	25.9	14.3	.9	1,295
Cocoanut, prepared	.....	3.5	6.3	57.4	31.5	1.3	2,865
Filberts	52.1	1.8	7.5	31.3	6.2	1.1	1,430
Hickory nuts	62.2	1.4	5.8	25.5	4.3	.8	1,145
Pecans, polished	53.2	1.4	5.2	33.3	6.2	.7	1,465
Peanuts	24.5	6.9	19.5	29.1	18.5	1.5	1,775
Pinon (*Pinus edulis*)	40.6	2.0	8.7	36.8	10.2	1.7	1,730
Walnuts, black	74.1	.6	7.2	14.6	3.0	.5	730
Walnuts, English	58.1	1.0	6.9	26.6	6.8	.6	1,250
Miscellaneous:							
Chocolate	.....	5.9	12.9	48.7	30.3	2.2	5,625
Cocoa, powdered	.....	4.6	21.6	28.9	37.7	7.2	2,160
Cereal coffee, infusion (1 part boiled in 20 parts water)‡	.....	98.2	.2	.....	1.4	.2	30

† Milk and shell.

‡ The average of five analyses of cereal coffee grain is: Water 6.2, protein 13.3, fat 3.4, carbohydrates 72.6, and ash 4.5 per cent. Only a portion of the nutrients, however, enter into the infusion. The average in the table represents the available nutrients in the beverage. Infusions of genuine coffee and of tea like the above contain practically no nutrients.

Nutritive Ingredients of Food

Food as purchased contains—

- Edible portion (*e.g.*, flesh of meat, yolk and white of eggs, wheat, flour, etc.)
  - Water.
  - Nutrients.
    - Protein.
    - Fats.
    - Carbohydrates.
    - Mineral matters.
- Refuse. (*e.g.*, bones, entrails, shells, bran, etc.)

USES OF NUTRIENTS IN THE BODY

Protein..... *e.g.*, white (albumen) of eggs, curd (casein) of milk, lean meat, gluten of wheat, etc.	Forms tissue.....	All serve as fuel to yield energy in the forms of heat and muscular power.
Fats..... *e.g.*, fat of meat, butter, olive oil, oils of corn and wheat, etc.	Are stored as fat.....	
Carbohydrates..... *e.g.* sugar, starch, etc.	Are transformed into fat and furnish heat and muscular energy.	
Mineral matters (ash)..... *e.g.* phosphates of lime, potash, soda, etc.	Share in forming bone, assist in digestion, etc.	

EXPERIMENTS

1. To test the presence of pectin in a fruit juice:

To one tablespoonful of any fruit juice add an equal volume of ethyl alcohol. Mix the same thoroughly in a glass and cool. If pectin be present there will appear in the liquid a gelatinous mass which may be gathered up on a spoon. Make a test of different fruit juices and note the varying amounts of pectin present.

If pectin be present in the fruit juice, it is possible to make jelly from the juice; otherwise it is impossible.

2. Testing fruit for starch:

Take 2 gm of iodine and mix with 6 gm of potassium iodine in a few drops of water. When the iodine is dissolved, add enough water to make 100 ccm of the mixture. Put in a bottle with a glass stopper, as the iodine volatizes readily at ordinary temperatures.

Take any green fruit, such as apples, pears, bananas, etc., remove the skin and apply to the fruit a few drops of the iodine solution. A blue color indicates starch. Iodine always gives a blue color when it comes in contact with starch. If the blue

color does not come, scrape off a little of the fruit with a knife, and treat with boiling water. Let cool and then test.

Repeat the experiment, using ripe fruit.

3. Effect of vinegar on milk:

Take half a cup of sweet skim milk and add a little vinegar. What effect does the vinegar have on the milk? What kind of substance is vinegar?

4. Effect of nitric acid on curd:

Take a little curd of milk and drain it well from the whey. Rinse with clear, cold water. Add a few drops of concentrated nitric acid. What color forms? This color indicates that the curd of milk is composed largely of protein. Whenever nitric acid produces this color when brought in contact with a substance, protein is present. What two proteins are found in milk? Which is found in the greater amount?

5. Effect of heat on casein:

Place some curd of milk on a small pie tin or other suitable baking dish, place in a hot oven and let it bake for a few minutes. What effect has heat on casein?

6. Microscopic examination of milk:

Place a drop of milk on a clean slide and cover with a magnifying glass. Describe the appearance of the milk. Are there any foreign bodies present? Repeat the experiment using a drop of cream.

7. Effect of rennin on milk:

Take half a junket tablet and dissolve it in a tablespoonful of lukewarm water. When dissolved, divide into four parts. Take half a cup of milk and bring it to the boiling point. Divide in halves.

Pour one-half of the boiling milk upon one part of the rennin solution. Set away to cool.

Allow the other half of the boiled milk to cool to 98° F. Then add it to another portion of the rennet and set aside to cool.

Take one-fourth cup of ice-cold water and add it to the third portion of rennet. Set aside with the others.

Heat one-fourth cup of milk carefully to 98° F. by placing the cup in boiling water. Then add it carefully to the last portion of the rennin solution. Set away with the others. Be sure that each is labeled carefully so that they will not become mixed, thus causing wrong conclusions to be drawn.

Will boiled milk make as good junket custard as does milk that has not been boiled? Will ice-cold milk make a junket custard? Why should we not gulp down large quantities of ice-cold milk? At what temperature does the junket tablet have the best effect upon the milk? This is about the temperature of the body.

(Adapted from *Elementary Domestic Science*, by Landes.)

8. Effect of heat on sour milk:

Take half a cup of sour milk. Heat it carefully to a temperature of 98° F. Heat another half-cup of milk to 120° F. Heat another half-cup to the boiling point. Take three sieves and place each over a bowl. Fit a piece of cheesecloth into each. Pour the first milk into one of the pieces, and the remaining two portions of the milk each into a separate sieve. Do not press the contents of any sieve. Let them stand a half-hour or so.

Examine the contents of each sieve. In which sieve are found the finest grains of curd? In which sieve are the hardest grains? Which sieve seems to contain the most curd? Which the least? Which curd do you think is the most indigestible? Why? What is the best temperature to heat milk for cottage cheese?

9. Babcock test to determine the fat content of milk:

Mix the sample of milk to be tested by pouring it from one dish to another two or three times. Place the graduated pipette into the milk and with the mouth draw up milk enough to nearly fill the pipette. The pipette should be held between the thumb and three fingers, leaving the forefinger free. When the pipette is filled, place the finger quickly over it when it is taken from the mouth, else the milk will all run out. This

requires practice. Then carefully lift the forefinger a little. This allows the milk to run out. Allow the milk to run out until the mark indicating 17.6 c c is reached. Then press the finger over the pipette and allow the milk to run into the test bottle, the neck of which is graduated to a scale of cubic centimeters. Take a cylinder, also graduated to the cubic centimeter scale, and measure into it 17.5 c c commercial sulphuric acid. Put this carefully into the milk in the test bottle, allowing it to trickle down the sides until it reaches the bottom rather than pouring it in a stream right into the milk. Shake gently with a rotary motion until the acid and milk are well mixed, which is shown when all the milk is turned brown. Place the test bottle in the centrifugal machine, taking care that the opposite side is balanced by a bottle containing water, and whirl five minutes, making a revolution each second by the watch. Let the machine stop by itself. Then add enough hot water to bring the contents up to the 8th mark on the stem. Whirl two minutes longer. Read from the extreme lowest to the highest point. Each large division, as from 1 to 2, represents a whole per cent, each small division is two-tenths of one per cent. The cream has risen into the neck of the bottle and the amount present can easily be determined by reading the scale on the neck of the bottle.

FIG. 91.— Babcock Milk-testing Apparatus

10. To determine specific gravity of milk by means of the lactometer:

The specific gravity of a substance is its weight compared with an equal volume of water. A specific gravity bulb may serve as a lactometer.

Ordinarily milk has a specific gravity of from 1.029 to 1.034. This means that ordinary milk may be from 1.029 to 1.034 times as heavy as an equal amount of water. But temperature has an effect on the specific gravity of milk. Milk that has a specific gravity of 1.032 at 70° is 1.033 at 60°. Because of this influence of temperature, the thermometer must always be used in connection with the lactometer.

To use the lactometer, pour 150 c c of milk into a 200 c c cylinder. Place the lactometer in milk and note the depth to which it sinks as indicated on the stem. Take also the temperature of the milk. If the milk has a specific gravity of less than 1.029, or contains less than 3% fat, it may be considered to be watered milk. If the milk has a high specific gravity, as above .035, and a low content of fat, some of the cream has been removed.

11. To test cocoa for starch, protein, and sugar:

Boil some finely-ground cocoa with water. Then let the solution pass through filter paper. Save the residue and the liquid filtrate.

Take a small portion of the liquid and add to it a few drops of iodine solution. Does the blue color form? Is starch present?

Add a few drops concentrated nitric acid to a small portion of the liquid. Is any yellow color developed? The yellow color indicates the presence of protein.

Take some more of the liquid in a test tube. Add a few drops of Fehling's solution, a blue solution made by adding an alkaline solution of Rochelle salt to a solution of blue vitriol. Boil. If a red crystalline substance forms and settles to the bottom, the liquid contains grape sugar. The red precipitate is known as cuprous oxide.

Repeat the tests, using the residue on the filter paper. What substances does the cocoa contain?

Take the remainder of the residue and dry it carefully in a crucible. Do not let it burn. Cover it with ether or benzine, but do not do this near a flame. Stir. Let it stand ten or

fifteen minutes, then filter. Let the liquid stand near a current of cool air until all trace of the ether or benzine has disappeared. Is there any substance left? What does it look like? Place a drop of it on a piece of paper. What does it do? What kind of substance is it?

Repeat the experiments, using chocolate instead of cocoa. Which contains the more fat?

12. Simple tests for detecting substitute butters:

Adapted from *Good Housekeeping*, June, 1912

(a) Boiling Test

Heat half a tablespoonful in a tablespoon over a low flame. Stir. Then increase the heat slightly and stir again, not neglecting the outer edges. Let it boil two or three minutes, stirring two or three times in the meanwhile. If the sample is renovated butter or oleomargarine, it will boil noisily, sputtering very much as a mixture of grease and water does when it is boiled. It will produce but very little or no foam, whereas genuine butter boils less noisily and produces a great deal of foam.

(b) Modified Waterhouse Test

Place a half-cup of sweet skimmed milk over the fire to heat. When nearly boiling, add a rounding teaspoonful of the sample to be tested. Stir and heat till the milk boils up. Pour into a cup and set this cup in a pan, about 9.5 inches across, in which are water and pieces of ice as large as a hen's egg or larger. The water should reach about one-fourth as high on the cup as the milk does. Stir the contents rapidly for ten minutes with alternate crosswise and rotary motion, and each minute by the clock move the cup around the edges of the pan to stir the ice and water thoroughly. If the sample gathers easily into a lump or soft mass soon hardening, it is oleomargarine; if not, it is either genuine or renovated butter. Then apply the boiling test to discover whether it really is genuine butter.

(c) Halphen's Reagent

Dissolve 1 gm sulphur in 100 c c of carbon disulphide. Add an equal volume of amyl alcohol.

Mix an equal amount of the reagent with the oil to be tested in a test tube. Make a saturated solution of salt and water and bring to the boiling point. Place the test tube in this solution and heat about fifteen minutes. A red color in the mixture indicates the presence of cottonseed oil. To show the delicacy of this test, take some pure lard or other fat, divide it into four portions. To the first add an equal volume of cottonseed oil, to the second, half its volume, and to the third, one-tenth its volume, leaving the fourth as it was. Test each sample with the reagent and note the different colors in each. The depth of the color shows to some extent how much oil is present.

13. Chemical test for mineral matter:

Place two or three half-inch cubes of meat in a lemon squeezer and squeeze out of them all the juice they contain. Dilute this with an equal quantity of water; pass through filter paper and pour into a test tube. Add a few drops of silver nitrate. What happens?

Take an equal quantity of clear water in a test tube and dissolve in it a pinch of salt. What kind of substance is salt? Add a few drops of silver nitrate to it. What happens? Silver nitrate will unite with the mineral matter in solution in the liquid to form the white cloud. Does meat contain any mineral matter?

14. Heat test for mineral matter in meat:

Place one or two half-inch cubes of meat in a crucible and heat over a Bunsen flame until there is nothing but ash left. Do minerals burn? Will this ash burn? Is there, then, any mineral matter in meat?

15. Effect of cold water on meat:

Cut a piece of meat from the round into half-inch cubes. Cover with cold water and let them stand for an hour. What is the appearance of the water? Pass the liquid through filter

paper. What is its appearance? Heat carefully. What change takes place? What substance has been dissolved by the cold water? Why should meat always be wiped with a damp cloth in preference to putting it into cold water to wash? Place a speck of salt into this boiled liquid. Taste it. Does it taste like salted water? What has given it this taste?

16. Effect of salt upon raw meat:

Take some half-inch cubes of lean raw meat and sprinkle all sides generously with salt. Let them stand ten or fifteen minutes. What change has taken place? What has caused the meat juices to exude from the meat? What has been their effect upon the salt? When it is being cooked why should meat not be salted before it is nearly done?

17. Physical structure of meat:

Take a few fibers of meat from the round. Scrape it, first on one side, then on the other, until nothing but the fiber remains. Test the portion scraped from the fiber with concentrated nitric acid. What color is obtained? What does this show?

Take the fibers in the hand. See if you can pick one to pieces. Try to tear one of them apart. What is their character? Towards the ends of the muscles these fibers come together to form a tendon. (Show a tendon.) It is the tendon which binds a muscle to the bone.

Place the mass of fibers in a hot oven. What is the effect of heat upon them? Could dry heat soften them? Their shrinkage is due to the fact that they lose water by evaporation in the oven.

18. Examination of meat fibers under the microscope:

Take a few fibers of beef from the round. Soak in salted water for a few minutes. Then place under the low power of the microscope. Examine the ends to see whether the fibers are hollow tubes.

19. Gelatin:

(a) ½ tp gelatin 2 tb cold water

Let them stand a few minutes and notice the appearance of the gelatin.

(b) Cover a few pieces of the stick or sheet gelatin with cold water and compare with the former experiment. Is the water absorbed as readily? Why?

(c) ½ tp gelatin ½ c warm water
2 tb cold water

(d) Use the same ingredients as in the preceding, but instead of the ½ c warm water, use ½ c boiling water. Compare the result of this experiment with the previous one.

(e) Chill both thoroughly and report results. What difference do you see? Why?

(f) Boil the mixture in (c), and then chill it. What happens during the boiling? Does it harden readily afterwards?

20. Starch and gluten in flour:

Make a stiff dough of 4 tb flour and 4 tb water. Knead the dough until it is smooth. Fit the ball of dough in a square of cheesecloth and wash it with water until the starch has all been washed out. Save the water used for washing. Let this settle. Pour off the water. Test the substance that settles for starch. How? What is the test? Take the substance remaining in the cheesecloth. What color is it? Stretch it. What can be said of the elasticity? This is the gluten of the flour.

21. Effect of heat and cold on yeast:

(a) Put into a glass cup one tablespoonful of molasses and one-eighth of a yeast cake, and put very hot water over these. Set aside, closely covered. After the mixture has been standing for some time, examine it. Are there any bubbles on the cup? What has happened to the yeast plant in this cup? Why is molasses added?

(b) Put one tablespoonful of molasses and one-eighth of a yeast cake into a glass cup and put one-half cup of cold water over these. Set this aside in cold water or on ice. After some time, examine it. Are there any bubbles on the cup? Warm the cup and notice the effect. Which is more favorable to the growth of the yeast plant, extreme cold or extreme heat? What is the effect on the dough if it be placed in a cool place?

(c) Put one tablespoonful of molasses and one-eighth of a yeast cake into a glass cup and put one-half cup lukewarm water over these. Set aside closely covered in a warm place (not hot) or stand it in warm water. Use a thermometer. After the glass has stood for some time, examine it. Notice the bubbles. Which temperature is the most favorable for the growth of the yeast plant?

KITCHEN AIDS

Cockroach exterminator:

Absolute cleanliness is necessary to avoid the multiplication of cockroaches in the home. Corners and crevices should be kept clean and dry and all garbage should be removed promptly. Powdered borax should be scattered liberally in all cracks where cockroaches hide, also over shelves and the tops of doors, door casings, and baseboards. This remedy is clean, non-poisonous, and cheap.

To drive away ants:

Ants, both red and black, very often invade the kitchen and the pantry. Oil of red cedar poured on bits of rags or cotton and placed in cupboards or other places infested by them will drive them away, for its odor is very disagreeable to ants.

The melting point of fats:

Olive oil	75°–76°
Cottonseed oil	95½°
Butter	91°–94°
Suet of most animals	101°–131°
Lard	108½°–112°

If olive oil at a temperature of 75° is thick or flecked with unmelted particles, this is an indication that some oil of a higher melting point has been mixed with it.

When butter holds its shape at a temperature of 94°, it shows that other fats than butter fat have been used in making it.

To clean brass:

Make a mixture of 2 oz. of rottenstone, 1½ oz. of sweet oil, 1 tb oxalic acid and ½ pt of water. Beat smoothly and bottle.

To clean tarnished nickel:

Make a paste of powdered pumicestone and sweet oil. Rub the nickel with this paste and polish with a soft cloth.

To clean the top of a stove:

After the stove becomes cool, rub it briskly with old newspaper or other waste paper. If the top has become red from the intense heat, rub a thin coating of lard over the surface before rubbing with the paper.

To remove stains from enameled ware:

Enameled ware should not be scraped with a knife or with any hard instrument. Use one tb of sal soda to each quart of water. Soak the dish an hour or more and the stains will wash off easily.

Cleaning aluminum ware:

Do not use soda, lye, ashes, sapolio, or any washing powder on aluminum ware. To restore the original lustre that the utensils had when they were purchased, they must be burnished at the factory. They may be cleaned and greatly improved in appearance by making a paste of precipitated whiting and alcohol and rubbing this all over the article. When it is dry, rub off the whiting and polish with a cloth.

To keep boiling meat from sticking:

If a wire teapot standard is put in the bottom of the kettle and the meat laid on it to cook, the meat will not stick to the bottom of the kettle.

To prepare new ironware for use:

Place new ironware in cold water with a little lye and some potato parings. Boil two hours and the iron will then be ready for use in cooking.

Table of seasons and approximate weights of fish:

FRESH WATER

FISH	SEASON	APPROXIMATE WEIGHT
Salmon	May to Sept	5 lb. or more
Shad	Jan. to June	3 lb. or more
White fish	Winter	4 lb.
Bass	At all times	2 to 8 lb.
Perch	Summer	⅛ lb.
Pickerel	At all times	1 to 4 lb.
Brook trout	April to Aug	Small
Lake trout	April to Aug	4 to 9 lb.
Pike	Summer	1 to 4 lb.

SALT WATER

FISH	SEASON	APPROXIMATE WEIGHT
Cod	At all times	3 to 20 lb.
Haddock	At all times	5 to 8 lb.
Halibut	At all times	3 to 10 lb.
Flounders	At all times	½ to 5 lb.
Blue fish	June to Oct	4 to 8 lb.
Mackerel	May to Sept	¾ to 2 lb.
Herring	Mar. and Apr	6 or 8 to the lb.
Smelts	Sept. to Mar	8 to the lb.
Lobsters	At all times	1 to 2 lb.
Oysters	Sept. to May	

Preparing fish for cooking:

Do not remove the head. It is the choicest part. Remove the eyes, and cleanse thoroughly with hot water.

Trim the fins with scissors; do not cut them entirely off.

Fresh fish soaked in cold, salt water for two hours will be sweeter, firmer, and in less danger of falling to pieces while cooking.

Laying fish on strips of salt pork while baking, not only improves it, but keeps it from sticking.

TABLE SERVICE

Pad:

Lay the pad, or silence cloth, on the table. This should be about three inches larger than the table on all sides. It should be pulled tight over the table, folded square at the corners, and pinned underneath.

Cloth:

The tablecloth, which should be ironed and folded with great care with as few folds as practicable, should be carefully unfolded. It is much easier to keep from mussing it if two girls unfold and lay the cloth. Lay it lengthwise of the table with the long crease exactly in the center and the same length of cloth, about nine inches, hanging over each end. Carefully smooth out the creases by standing at either end and pressing the hands, palms downward, lightly over the cloth from the center to the outside, the full length of the table. Repeat the same operation standing at the middle of the sides.

Luncheon sets:

For luncheons, it is now quite customary to use individual plate, tumbler, and other small doilies instead of a tablecloth. These are not appropriate, however, unless the table is highly polished.

A complete set consists of six (or more) twleve-inch plate doilies, six (or more) 8-inch bread and butter plate doilies; six (or more) 4-inch tumbler doilies, and some odd sizes for salts and peppers and other extra things set on the table, besides a large centerpiece.

For luncheons, small hemstitched, scalloped, or fringed napkins are used.

After the cloth is laid, the linen or lace centerpiece should be placed in the center of the table and upon it should be placed

the bouquet or other decoration. If flowers are used, they should be sufficiently low to allow those on opposite sides of the table to see each other.

If loose flowers are to be used, they should not be scattered profusely, but laid carelessly here and there or one or two small ones on each napkin.

At a formal dinner a service plate for each person, this plate of the large dinner size, is put in the middle of the space allotted to each, about twenty inches, and about an inch from the edge of the table. These plates are put on the table just before the dinner is served and not removed until just before the dessert is brought in.

Silver:

The number and position of each article of table silver depends upon the meal and what is to be served. The convenience of the guest is the one unchanging rule that determines the placing.

(a) Knives: When a knife or knives are to be used, as many as will be needed before dessert should be placed at the right of the service plate, each with the sharp edge turned toward the plate, in the order in which they are to be used, beginning at the extreme right, that is, the one farthest from the plate is the one first used.

(b) Forks: When knives are needed, as for a formal dinner or when uncut meat is served, the forks should be placed at the left of the service plate, as many as are needed before dessert, in the order they are to be used, beginning at the extreme left. All the tines should be turned up. (1) Fish; (2) entrée; (3) roast; (4) salad.

If there are not too many courses so that there is a great display of silver, the dessert fork may be placed on the table with the others at the beginning, next to the service plate.

(c) Spoons: When both knives and forks are used, as many teaspoons as are needed may be placed in front of the service plate, arranged symmetrically with handles to the right, or they

may be placed at the right of the knives. The soup spoon is always at the right of the knives.

If only forks are used, these should be placed at the right of the plates and the spoons at the right of the forks, the one to be first used being at the extreme right.

If coffee is not served until the dessert is brought in, some hostesses do not place any teaspoons on the table at the beginning, as there will be, in most cases, no use for them.

Napkins:

Napkins are folded in quarters and placed on the table parallel with the edge of the table and on a line with the service plate, the free edges being to the right and to the edge of the table.

The napkins should be at the left of the forks, if they are at the left and at the left of the plate if the forks are at the right.

If no service plate is used, the napkins should be where the plate is ordinarily placed. If the number of forks makes the table look crowded, many hostesses lay the nakpin on the service plate.

Dinner roll:

At a formal dinner, a bread stick, dinner roll, or piece of bread about 2½ inches by 1½ inches is placed on the napkin, which is folded over once to cover it.

Glasses:

Glasses for water should be placed at the right and a little above the service plate or near the tip of the knives. They should be filled with water just before dinner is announced.

Bonbons and relishes:

Bonbons and relishes, such as radishes, olives, celery, and salted nuts, may be placed on the table at pleasure, although it is becoming usual to set these on the sideboard or table and pass to each guest.

Seasonings:

It is not customary at a formal dinner to have butter or seasonings on the table. The condiments, sauces, and seasonings are served with each course as needed.

Informal and family dinners:

In setting the table for an informal or family dinner, the service plate should be omitted. All the knives and forks to be used may be put on the table, also salts and peppers near the corners of the table or one of each for every two persons.

Small plates and bread and butter knives for the butter ball and bread or dinner roll, which should be put on before dinner is announced, are placed at the left and above the forks.

Soup may be served by the hostess from a large tureen instead of being brought in individual plates from the kitchen, in which case the tureen should be placed in front of the hostess and the soup plates to her left.

Placing of chairs:

Chairs should be placed at the table so that the front edge of each is just below the edges of the tablecloth. The chair should not be moved nearer the table after one is seated.

Seating guests:

The guest of honor, if a lady, is placed on the right of the host; if a gentleman, on the right of the hostess.

Serving guests:

There are two ways of serving at a formal dinner, both equally in good form.

The more formal way: Arrange each course in the pantry on individual plates.

Take the tray in the left hand, put the plate containing the individual portions upon it. Take it to the right side of each guest. With the right hand place it upon the service plate until after the soup course, with which the service plate may be removed, then place it in front of each guest and close to the edge of the table.

If anything is to be served with a course, it should be placed on a tray and passed to the left side of each guest, being held low enough to enable the guest to help himself with his right hand.

The more fashionable way is to leave the service plate on the table until dessert. In this case the tray is not used in placing the course.

The more simple way (Russian style): Have the course cut in suitable pieces on a large dish or platter with the necessary serving spoon, knife, or fork.

Put on a tray or, if too large, carry in the hands with a folded napkin between the dish and the hand.

Serve at the left of each guest.

Wait until all have finished before removing a course.

Take the tray in the left hand, pass to the right of each guest and remove the plate with the right hand, placing it on the tray.

Remove but one plate at a time, or all belonging to the course at each cover.

It is allowable to dispense with the tray if pressed for time, and to take a plate in each hand, thus removing two plates at a time.

The English Style of Serving: The English mode of serving is to set the whole of each course, often containing many dishes, at once upon the table, the hostess serving the soup, salad, and dessert, and the host serving the fish and roast.

Compromise Style of Serving: By a compromise style, or plan, such dishes as the salad or dessert, which present an attractive appearance and can be served quickly and without much effort, are served by the hostess, and a fish, for instance, which is easily separated into individual portions, is served by the host on the plates set before him. The other dishes are served from the pantry.

Order of serving:

When the dinner is served from the pantry, the guests should be served in rotation alternately at the right and left of the hostess, going in opposite direction for each successive course. The host and hostess should be served last.

When guests are served by passing the courses for guests to help themselves, a style becoming very popular, it is good form

to pass the dish to the hostess first, in order that if there is any peculiarity or novelty about the dish, the guests may be saved possible embarrassment by seeing how they are expected to take the food from the dish.

Place cards:

When cards are used to seat guests, they should be placed on the napkins. Nothing but the name of the guest or the name and a simple decoration is required.

Finger bowls:

Finger bowls should be passed after any course that requires the fingers to touch the food. These should be set on a small dessert plate upon which is a dainty doily and placed in front of each guest from the right.

Table etiquette:

Spoon: A spoon is used only for food too soft to be easily handled with the fork.

Always eat or sip from the *side* of a spoon, and with *no* noise of the lips. In taking up soup with a spoon, use a backward motion, that is, a motion away from you.

Never leave a spoon standing in a cup. After using to stir the sugar or to sip, remove it from the cup, and place it in the saucer. If no saucer is used, lay the spoon on the side of the plate.

Knife and Fork: Only forks and spoons are used to carry food to the mouth. The knife or fork, when not in use, should be laid across the plate at the right side.

The knife and fork when used for cutting should be held with the handles in the hollows of the hands.

The knife and fork should not be held upright on the table.

When used to carry to the mouth meat or other food which must first be cut, the fork should be held in the left hand.

No gesticulations should be made with the knife and fork.

Napkin: The napkin should be placed upon the lap with one fold rather than spread out its full size.

The napkin should never be tucked in the collar.

Sticky fingers should be cleaned with the napkin.

Dip the tips of the fingers in the finger bowl and dry on the napkin.

When one is a guest at a single meal at a house, the napkin should not be folded again, but laid loosely at the left of the dessert dish.

Miscellaneous directions:

Put only small portions of food into the mouth at one time.

Do not open the mouth to receive food until the food reaches the mouth.

Hold the arms close to the sides while eating.

Never put the elbows on the table.

Sit close to the table and keep both feet flat on the floor.

Sit near enough to the table to maintain an easily erect position while eating.

Never reach across the table for food. Ask to have it passed to you.

Never try to talk with food in the mouth.

Toothpicks should be used only in private.

Stand at the back or side of the chair until the hostess gives the signal to be seated.

Sit in a chair at table from the right side of the chair and rise from the same side.

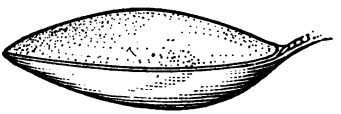
Speak only in low, well-modulated tones at the table.

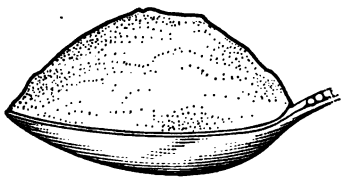
Never leave the table before the others without asking to be excused.

Coffee, tea, and cocoa should be drunk from the cup, not from the spoon, except just at first when sipped to ascertain if the flavor or the temperature is right.

Measurements

2 level teaspoonfuls—1 rounding teaspoonful.





2 rounding teaspoonfuls—1 heaping teaspoonful.

64 drops	=1 teaspoon
4 saltspoons liquid	=1 teaspoon
3 teaspoons	=1 tablespoon
3 teaspoons dry material	=1 tablespoon
4 tablespoons of liquid	=1 wine glass =½ gill =¼ cup
16 tablespoons of liquid	=1 cup
16 tablespoons dry material	=1 cup
8 heaping tablespoons dry material	=1 cup
4 cups liquid	=1 quart
4 cups flour	=1 quart
4 cups flour	=1 pound
2 cups solid butter	=1 pound
½ cup butter	=¼ pound
2 cups granulated sugar	=1 pound
2½ cups powdered sugar	=1 pound
1 pint milk or water	=1 pound
9 large eggs or 10 medium	=1 pound
1 round tablespoon butter	=1 ounce
1 heaping tablespoon butter	=2 ounces
1 heaping tablespoon butter	=¼ cup
1 heaping tablespoon sugar	=1 ounce
2 round tablespoons coffee	=1 ounce
1 tablespoon liquid	=½ ounce
butter size of egg	=2 ounces
butter size of egg	=¼ cup

Because of the growing custom of selling fruits and vegetables by weight, it becomes necessary for the consumer to know the weight of a bushel of the various commodities. Not all states have laws regulating these weights, but the table below may be considered as fairly representative.

Extract from Minnesota Laws Regarding the Weighing of Commodities

In contracts for the sale of any of the following articles, the term "bushel" shall mean the number of pounds avoirdupois herein stated:

	1 Bu.	1 Qt.
Apples (green)	50 lb.	
Beans (navy)	60 lb.	1 lb. 14 oz.
Beans (lima)	56 lb.	1 lb. 12 oz.
Beets	50 lb.	
Carrots	45 lb.	
Chestnuts	50 lb.	
Cranberries	36 lb.	1 lb. 2 oz.
Cucumbers	48 lb.	
Hickory Nuts	50 lb.	
Onions	52 lb.	1 lb. 10 oz.
Parsnips	42 lb.	
Peaches (not dried)	48 lb.	
Peanuts	22 lb.	
Pears	45 lb.	
Peas (smooth)	60 lb.	1 lb. 14 oz.
Potatoes (Irish)	60 lb.	
Potatoes (sweet)	55 lb.	
Rutabagas	52 lb.	
Tomatoes	50 lb.	
Turnips	55 lb.	
Walnuts	50 lb.	1 lb. 9 oz.

Scale of Metric Weights and Table of Equivalents

10 milligrams = 1 centigram
10 centigrams = 1 decigram
10 decigrams = 1 gram
10 grams = 1 dekagram
10 dekagrams = 1 hektogram
10 hektograms = 1 kilogram

1 kilogram = 2.2 lb.
1 gram = .0022 lb.
1 gram = .0352 oz.
1 cubic centimeter of water at 4° C. weighs 1 gram
1 pound = .4536 kilograms
1 ounce = 28.35 grams
1 C. degree = 1.8 Fah. degrees

Some convenient approximations:

Bacon, 30 to 35 thin slices in one pound.

Baking powder, 2½ cups in one pound.

Beans, 2½ cups in one pound.

Cocoa, 3½ cups in one pound.

Coffee (ground), 5 cups in one pound.

Cornmeal, 2⅔ cups in one pound.

Dates, 45 small or 30 large in one pound.

Lemon, juice of one about 3 tablespoonfuls.

Meat, finely chopped, 2 cups in one pound.

Oats, rolled, 5 cups in one pound.

Onions, 8 medium size in one pound.

Orange, juice of one measures about ½ cup.

Peanuts, one pound will give one cup of shelled.

Prunes, 40 large or 60 small in one pound.

Potatoes, 4 of medium size in one pound.

Rice, 2 cups in one pound. 1 cup of uncooked rice will make 4 cups of cooked.

Soda, 2 cups in one pound.

Spices, ground, one cup weighs 4 ounces.

Sugar, granulated, 2 cups in one pound; powdered 2⅔ cups; brown 2⅔ cups; loaf 75 pieces; domino 56 pieces.

Walnuts, English, 70 walnuts, or one pound, unshelled, will make one cup of meats.

Approximate estimates of supplies for a family of two adults:

Coffee	¾ lb	1 week
Tea	¼ lb	1 week
Sugar	⅔ lb	1 week
Flour	4 lb	1 week
Butter	1½ lb	1 week
Lard	1 lb	2 weeks
Potatoes	1 pk	1 week
Laundry Soap	1 cake	1 week
Milk	1 pt	1 day
Cream	½ pt	1 day

FRENCH WORDS AND PHRASES

à la or **à'la mode'de** (ȧ'lȧ mōd'dē), after the fashion of; *à la reine*, queen style; *à la Russe*, Russian style; *à la Anglaise*, English style.

au gratin (ō'grȧ'tăN'), with a crust formed by browning in the oven.

au maigre (ō'mā'gr'), dishes prepared without meat — Lenten dishes.

au naturel (ō'nȧ'tü'rĕl'), cooked simply and plainly.

beurre (bûr), butter.

beurre fondu (bûr fôn'dü'), melted butter.

beurre frais (bûr frĕ'), unsalted butter.

beurre noir (bûr nwȧr'), butter melted and browned.

beurre salé (bûr sȧ'lā'), salted butter.

bisque (bĭsk), a thick, rich soup made of shellfish, birds, or rabbits.

blanc mange (bla mänzh), a dessert made of gelatin or cornstarch and milk.

blonde de veau (blŏnd'de'vō'), a rich veal broth.

bouchée (boo'shā'), a small puff-paste patty.

bouillon (boo'yôn'), a clear soup made by slow boiling of lean beef or other meat.

café noir (cä fā'nwôr'), black coffee, that is, coffee without cream and sugar.

Camembert (Cȧ'män'bâr'), a soft, unpressed cream cheese.

canape (cȧ'nȧ'pā'), a slice of bread fried in butter upon which anchovies, mushrooms, etc., are served.

cannelon (cȧ'n'lôN'), a veal or beef loaf; a roll of baked puff paste.

caviare (căv'i är' or cȧ'vyär'), the salted roe of the sturgeon or other large fish.

charlotte (shär'lot), a pudding made of strips of bread or cake covered with fruit and a preparation of gelatin.

charlotte russe (rōōs), a dish composed of whipped cream or custard inclosed in sponge cake.

chaud-froid (shō'frwä'), fillets of game, poultry, or the like served cold in jelly or sauce.

compote (cŏm'pōt or côN'pōt'), fruit preserved in syrup so as to retain its form; pigeons, quails, or larks mixed with peas or mushrooms.

consomme (côN'sŏ'mā'), strong broth of meat and vegetables slightly browned.

cotelette (cŏ't'lĕt'), a small rib of meat; chop.

crècy (à la) (crā'cy), dishes containing carrots in the form of a purée.

crêpe (crāp), a pancake.

crêtes (crāts), giblets of poultry or game.

croquettes (cro kĕts′), fried balls made of minced meat, fowl, rice, or other ingredient.

croustade (crōō′stȧd′), a crisp patty made of bread, rice, cornstarch, etc., to receive some filling.

crouton (crōō′tôN′), a small cube of toasted bread.

cuisse (kwĭs), leg; cuisse de volaille (vō′lä′y′), leg of chicken.

demi-tasse (dē mē′täs′), a small cup for, or of, black coffee.

éclair (ā klâr′), a small oblong cake containing flavored cream and glazed or frosted.

entrée (äN′trā′), a side dish.

entremets (äN tr′mā′), a side dish or dainty, usually eaten after the principal dish.

fillet (fĭl′et), a piece of lean meat without the bone; *fillet of beef*, the tenderloin or under side of the sirloin; *fillet of veal* or *mutton*, a slice from the fleshy part of the thigh; *fillet of fish*, a slice of flat fish without bone.

Française (à la) (frȧN′çās′), in French style.

frappé (frȧ′pā′), an iced mixture or beverage, as a water ice, flavored with fruit, frozen soft, and served in glasses.

fricassée (frĭc′ȧ sa′ or fric′a se′), meat cut in pieces and stewed in a gravy.

glace (glȧ′sā′), coated with icing; iced; glazed.

gratin (grȧ′tăN′), the brown crust formed by cooking with a covering of buttered crumbs or with grated cheese.

hors d'oeuvre (hôr′dû′vr), a dish served as a relish or appetizer, usually at the beginning of a meal, such as sardines, oysters, and oil salads.

Italienne (à l′) (Ĭ′tȧy′ĕn′), in Italian style, that is, containing macaroni with cheese and tomato.

macedoine (mȧ′sā′dwȧn′), cooked vegetables with white sauce; a sweet jelly with whole fruit.

maitre d'hotel (mâ′tr′dō′tĕl′), a sauce made of melted butter, chopped parsley, lemon juice or vinegar, and seasonings.

mayonnaise (mȧ′yō′nāz′), a thick salad dressing made of raw yolks of eggs beaten with oil and vinegar and seasonings.

menu (mē nü′ or mĕn′u), the details of a meal; a bill of fare.

meringue (mē răNg′), a composition of powdered sugar and beaten whites of eggs, used on puddings, pies, and fruits; also made into small cakes or shapes and baked.

mousse (mōōs), a frozen dessert of frothy tarture. It differs from ice cream in being beaten before, not during, the freezing process.

paté (pä′tā′), a pie or patty.

paté de foie gras (dē fwä′grä′), patty of goose liver.

pot-au-feu (pō′tō′fû′), broth, meat, and vegetables boiled together.

purée (pü′rā′), a soup made by boiling food to a pulp and crushing it through a sieve.

quenelle (kē nĕl′), a forcemeat ball, usually of chicken or veal, commonly cooked in boiling water or fried in deep fat.

ragout (ra gōō′), pieces of meat stewed with vegetables and highly seasoned.

rechauffé (rā′shō′fā′), a dish of food that has been warmed again.

relevé (rĕ′l′vā′), a new course or dish which replaces another.

remové (rĕ′mō′vā′), the same as *releve.*

roux (rōō), a thickening of flour and melted butter, as for soup.

salpicon (săl′pĭ kŏn), a ragout of chopped meat or fish and vegetables with savory sauce.

sauté (sō′tā′), to fry lightly and quickly in a little hot fat.

soufflé (sōō′flā′), a spongy dish, served hot, made of eggs, milk, and flour, beaten till very light, and mixed with fruit, cheese or other flavoring.

timbale (tăN′bàl′), a seasoned preparation, as of chicken, lobster, cheese, or fish, cooked in a drum-shaped mold; also a pastry case, filled with a cooked mixture.

velouté (vĕ lōō′tā′), a white sauce made by boiling down ham, veal, beef, fowl, bouillon, etc., then adding soup stock, seasoning, vegetables, and thickening and again boiling and straining.

vol-au-vent (vō′lō′văN′), a case of light puff paste made with a raised border, filled, after baking, with a ragout of meat, fowl, or the like.

SPANISH WORDS

Bacon	Tocino	To se′no
Bananas	Platanos	Plah′tah nos
Beans	Frijoles	Fre ho′las
Beefsteak	Beefstek	As in English
Bread	Pan	Pahn
Butter	Mantequilla	Man ta ke′yah
Cauliflower	Coliflor	Ko le flor′
Cheese	Queso	Kay′so
Chicken	Pollo	Po′yo
Chocolate	Chocolate	Cho ko lah′ta
Chops	Costillas	Kos te′yahs
Coffee	Café	Kah fa′
Coffee and Milk	Café con leche	Kah fa′ con la′ cha
Cream	Crema	Kra′mah
Cutlet	Chuleta	Choo lay′tah
Figs	Higos	E′gohs

Fish	Pescado	Pes cah'do
Fork	Tenedor	Ta na dor'
Fried eggs	Huevos fritos	Wa'vos fre'tos
Fried potatoes	Papas fritas	Pah'pahs fre'tahs
Glass	Vaso	Vah'so
Grapes	Uvas	U'vas
Ham	Jamon	Ha mohn'
Hard-boiled eggs	Huevos fritos	Wa'vos fre'tos
Ice	Hielo	e a'lo
Ice cream	Helado	A lah'do
Knife	Cuchillo	Ku che'yo
Lamb	Cordero	Kor da'ro
Lemon	Limon	Le mon'
Lemonade	Limonada	Le mo nah'dah
Lettuce	Lechuga	La chu'gah
Milk	Leche	La'cha
Mustard	Mostaza	Mos tah'sah
Mutton	Carnero	Kahr na'ro
Oil	Aceite	Ah sa'e ta
Omelet	Tortilla de huevos	Tor te'ya da wa'vos
Oranges	Naranjas	Nah rahng'hahs
Peas	Chicharos	Che'cha ros
Pepper	Pimienta	Pe me n'tah
Plate	Plato	Plah'to
Potatoes	Papas	Pah'pahs
Rare	Poco asado	Po'ko ah sah'do
Rice	Arroz	Ar ros'
Salt	Sal	Sahl
Soft-boiled eggs	Huevos pasados por agua.	Wa'vos pah sah'dos por ah'gwah
Soup	Sopa	So'pah
Strawberries	Fresas	Fray'sahs
Sugar	Azúcar	Ah su'kar
Tea	Té	Ta
Teaspoon	Cucharita	Cu cha re'tah
The bill of fare	La lista	Lah le'sta
Tomatoes	Tomates	To mah'tas
Turkey	Pavo	Pah'vo
Water	Agua	Ah'gwah
Well done	Bien asado	Be n' ah sah'do

FREE GOVERNMENT BULLETINS

The following bulletins may be obtained free by request of the Department of Agriculture, Washington, D. C Order by number.

No. 34. Meats, Composition and Cooking, Chas. D. Woods
No. 85. Fish as Food, C. F. Langworthy, Ph. D.
No. 93. Sugar as Food, May Hinman Abel
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GLOSSARY

adulteration, the act of making impure by the admixture of a foreign or baser substance.

albumen, the white of an egg.

albumin, the protein of milk, muscle, and of many vegetable tissues.

alkaline, having the power of forming salts with acids.

aluminum, a bluish silver-white metal, noted for its lightness.

amylose, (ăm′i lōs) any of the starch group of carbohydrates.

annatto, a vegetable dye used in coloring oleomargarine.

antiseptic, any substance used to destroy bacteria.

artichokes, aster-like plants, the flower-bracts and receptacles of which are used for food.

asbestos mat, a mat made of fireproof material.

assimilation, the process by which the nutritive material which is taken as food is changed to the substance of the body.

bacteria, a group of vegetable microörganisms, widely distributed.

baking, cooking by dry heat.

baste, to moisten with melted fat or other liquid to prevent burning and to add flavor.

batter, a mixture of a starchy, dry ingredient and a liquid.

beaten "dry," said of the whites of eggs when they are beaten so much that little flakes are thrown off.

beaten "stiff," said of the whites of eggs when beaten until they do not run when inverted.

bechamel (bā′shȧ′měl′), a rich white sauce made of butter, flour, white stock, seasoning, and cream.

binding, a mixture of flour and butter added to a soup to thicken it.

bisque, a thick, rich soup made of shellfish, birds, or rabbits.

bladder worm, a parasite of pork, causing tapeworm in human beings.

blanch, to make nuts white by removing the skin by scalding.

blanc mange, a dessert made of gelatin or cornstarch and milk.

blow end, the blossom end of fruit.

boiled dressing, a cooked salad dressing made of sugar, vinegar, butter, eggs, salt, pepper, and mustard.

boiling, cooking in hot water.

bolted flour, flour sifted through bolting, a silk cloth.

borax, a crystalline salt used as a cleansing agent.

bouillon (bo͞o′yôn′), a clear soup made by slow boiling of lean beef or other meat.

braising, stewing or broiling in a covered kettle or pan.

bread panada, bread soaked in water till it is soft.

brick tea, a kind of tea made by grinding, steaming and pressing tea leaves in a mold.

Brie, a kind of soft cream cheese made in Brie, France.

brine, a salt solution.

brisket, the breast or lower part of the chest of animals in front of and between the fore legs.

broiling, cooking by direct exposure to heat on hot coals or over a gas flame.

brown stew, a stew made by browning the meat before the water is added.

brussels sprouts, a variety of cabbage, flavored like cauliflower.

butter-cake method, a method of mixing ingredients in which the butter and sugar are first creamed; then eggs are added; then flour and milk alternately.

butter hands, wooden paddles for shaping butter for table use.

by-products, a secondary product produced in the course of a manufacture in addition to the principal product.

café-noir (ca′fe′nwôr′), black coffee, that is, coffee without cream.

caffeine, (căf′ē ĭn), a stimulating compound found in coffee and tea.

calorie (căl′o rĭ), the amount of heat required to raise the temperature of one gram of water one degree centigrade.

calorimeter, an instrument for measuring food values.

Camembert (Cä′män′bâr′), a soft, unpressed cream cheese.

cannelon (cä′n′lôn), a roll of highly seasoned minced meat baked or fried; also a hollow stick or roll of baked puff paste.

capers, greenish flower buds of the caper plant, used pickled as an ingredient of sauces.

caramel, burnt sugar.

carbohydrates, compounds composed of carbon, hydrogen, and oxygen.

cassava (ca sä′va), a plant (manioc) having fleshy rootstocks, which yield a nutritious starch.

casserole, baked dish of meat or vegetable combined with bread or cracker crumbs.

catsup, a table sauce made of tomatoes with vinegar and spices.

caustic, burning, corroding.

caviare (căv′i ăre′), the salted roe of the sturgeon or other large fish.

Cayenne (Cā′ĕn′), red pepper.

cecils, balls of minced meat and bread crumbs.

cellulose, the paper-like substance composing the walls of animal and vegetable cells.

cereals, grains.
chocolate, a substance made from the bean of the cacao tree.
chop, a small slice of meat cut from the leg or ribs.
chowder, a dish made of fresh fish or clams, biscuit, and onions stewed together.
citric acid, the acid of lemons, currants, gooseberries, and the like.
citrous fruits, fruits like the orange, lemon, and grape fruit.
clarify, to free from impurities and thus make clear.
coagulate, to curdle or clot.
cocoa, a substance made from the bean of the cacao tree, and differing from chocolate in that the oil has been removed.
colander, a vessel with a perforated bottom.
cold process, the making of jelly without cooking the juice.
collagen, a material, soluble in water, found in bone, connective tissue, tendons, and cartilage.
composite, a food composed of ingredients having different food values.
compote dish (cŏm′pōt), a fancy dish for holding a mold of jelly or other relish.
compound lard, a mixture of beef suet and cottonseed oil used as a substitute for lard.
compressed yeast, a by-product of distilleries where whiskey is made.
condiment, something used to season food.
conserve, a kind of preserve made from a mixture of fruits.
consomme (côn′sō′mę′), strong broth of meat and vegetables slightly browned.
corer, a utensil used for removing the core from apples.
corned, preserved and seasoned with salt.
cottolene, a product of cottonseed oil used as lard.
cottonseed oil, an oil made from the seed of the cotton plant.
cottosuet, a substitute for lard.
cream, to rub or beat butter until it is creamy.
cream soup, the strained pulp of a vegetable combined with milk and a binding.
croquettes, fried balls made of minced meat, fowl, rice, or other ingredients.
crouton (crǫ′tŏn′), a small cube of toasted bread.
crown roast, pork, lamb, or mutton loins shaped by cutting the joints of the backbone as for chops and fastening the whole together in a circle.
curdle, to thicken.
curing, preserving by drying, salting, or smoking.
curried, seasoned with a condiment made of turmeric powder, curry leaves, and spices.
cut in shortening, to mix lard or butter with flour by means of a knife.
cutlet, a slice from the leg of veal.

denatured, having the nature changed; said of alcohol into which oil has been put to render it unfit for drinking.

desiccated, preserved by drying.

dessert (de ẓĕrt′), a service of fruits or sweetmeats at the close of a dinner or luncheon.

dextrin, a soluble gummy substance formed from starch by the action of heat, acids, or ferments.

diced, cut into small cubes.

dietary, pertaining to the diet.

dietetics, rules for diet.

doily, a small ornamental piece of linen or lace, usually round.

double boiler, a cooking utensil consisting of two covered basins, one inside the other.

double cream, cream 24 hours old.

Dover egg beater, an egg beater operated by means of a wheel and a crank.

draw, to remove the entrails and other organs from fowls.

drawn butter, butter melted and mixed with flour and hot water.

dredge, to sprinkle with flour.

drippings, the fat that is left from cooking meat.

drop batter, a batter thick enough to break from the spoon when held suspended.

dry yeast, yeast made from liquid or compressed yeast by adding corn-meal or some other starchy material.

Edam, a Dutch pressed cheese made in balls.

edible, fit to be eaten.

edible oil, an oil that may be eaten.

entire wheat flour, flour made from the whole wheat kernel except the outer covering.

entrails, the internal parts or intestines of animals.

entree (ăn′trā′), a side dish.

enzyme, a soluble ferment, also called diastase (dī′a stās).

epicure, one devoted to the luxuries of the table.

essential oil, any of a class of volatile, odoriferous oils found in plants; called also volatile oil.

extension sieve, a sieve with sliding wires on either side to serve as a support.

extractives, the flavoring substances in meats.

fermentation, a chemical change similar to that made by yeast.

fibrous, consisting of fibers, or like fibers.

filler, something used to thicken ice cream.

filtered, strained through cloth, paper, sand, or charcoal.

fission, a method of reproduction in which the organism lengthens out and divides in the middle.

fixed oil, a non-volatile oil, as olein, which leaves a permanent greasy stain, and which cannot be distilled unchanged.
fold in, to combine the beaten whites of eggs with a batter without beating.
fondant, a preparation of sugar used as a basis in making candy.
fondant dipper, a wooden utensil shaped like a spoon, with slits in the bowl.
forcemeat, meat chopped fine and highly seasoned.
former, a machine used to shape the crushed seed of cotton into cakes.
French dressing, an uncooked salad dressing made of olive oil, vinegar, and seasonings.
French potato cutter, a utensil for cutting potato into round balls.
fricasseeing, stewing fowls or other meat cooked in a gravy.
fritter, a small quantity of batter fried in boiling lard.
fruit pricker, a utensil made by sticking needles in a cork.
frying, cooking in smoking-hot fat deep enough to cover the food.
fudge, a kind of soft candy made of milk, sugar, and chocolate or maple sugar.
garbage, waste animal or vegetable matter.
garlic, a plant resembling the onion.
garnishing, something put on or around a dish of food for ornament.
gas plate, a simple plate attachment connected with the gas pipe and used for cooking.
gelatin, animal jelly.
giblets, the liver, heart, and gizzard of fowls.
glazed, covered with a coating of white of egg or melted sugar.
glucose, grape sugar, or invert sugar.
goulash (gōō′läsh), a ragout of steak flavored with paprika and vegetables.
Graham flour, unbolted wheat flour.
Halphin's reagent, a test for detecting oil.
Hamburg steak, beef chopped fine and broiled or fried in cakes.
hard sauce, sugar and creamed butter.
haricot (hăr′i cō), a ragout of meat, especially mutton or lamb.
hollandaise (hŏl′an dāz′), a sauce consisting of a seasoned emulsion of butter and yolk of eggs with a little lemon juice or vinegar.
hominy, maize hulled and broken for food.
hors d'oeuvre (hôr′dū′vr), a dish served as a relish, usually at the beginning of a meal.
invert sugar, a mixture of grape sugar and fruit sugar.
Irish stew, a mixed stew.
jelly bag, a bag used for straining the juice from fruit pulp.
junket, milk coagulated with rennet, sweetened and flavored.
kosher meat, the flesh of animals killed according to Jewish law.
lactic acid, the acid of milk.

lactose, a hard, crystalline sugar found in milk.
lardoon, a strip of fat pork or bacon inserted into meat.
leaf fat, layers of fat about the kidneys of the hog.
leavening agent, something added to a batter to make it light.
legume, a plant like the pea and bean.
legumin, the protein of peas, beans, etc.
lentil, a plant with flattened, lens-shaped seeds, which are cooked like peas or beans.
lime water, a water solution of slaked lime used for medicine.
liquid custard, a custard stirred constantly while cooking.
lukewarm, neither hot nor cold.
macaroni, a paste made of wheat flour and dried in long, slender tubes.
macaroon, a small cake made of white of egg, sugar, and pounded almonds or other nuts.
macedoine (mȧ′sā′dwȧn′), a mixed dish, as of vegetables with white sauce.
maitre d'hotel (sauce), a kind of sauce made of melted butter, lemon juice or vinegar, and seasonings.
malic acid, the acid of apples.
marinate, to soak for a time in oil or vinegar.
marjoram (mär′jo ram), a mint used for flavoring.
marmalade, a fruit butter made by adding sugar and spices to the cooked pulp of fruit after the juice has been squeezed out for jelly.
mastication, the act of chewing.
mayonnaise (mā′o nāz′), a thick salad dressing made of raw yolks of eggs beaten with oil and vinegar, and seasonings.
measly pork, pork infected by the bladder worm, known by its lumpy or speckled appearance.
meringue (mĕ răng′), a composition of powdered sugar and beaten whites of eggs, used on puddings, pies, and fruits.
mill, to beat a mixture with the egg beater.
mixed stew, a stew made by cooking vegetables with the meat.
mold, a substance which develops from spores on all starchy foods.
Neufchatel (Nû′ça tĕl′), a kind of soft white cheese made from sweet milk.
neutral (lard), a high grade of lard made in the packing plants of leaf fat only.
noodle, a mixture of flour and egg used in making soup.
oils, fats that become liquid at ordinary temperatures.
olein, a fat ordinarily liquid, but solidifying at temperatures below 0° C. Olein dissolves solid fats.
oleomargarine (ō′le o mär′ga rēn), a substitute for butter made of beef suet, lard, and cottonseed oil.

omelet, a dish consisting of eggs beaten up with milk or water and cooked in a frying pan.

omelet pan, a light-weight oval or round frying pan.

palmitin, a solid, crystallizable fat found mixed with stearin and olein in animal fat, with olein and butyrin in butter, with olein in olive oil, etc.

pan broiling, broiling meat in a pan over the fire.

pancreas, one of the digestive organs lying near the stomach.

paprika (pä′pri ka), the dried ripened fruit of the pepper plant.

paraffin, a waxy substance, used in making candles, preserving food, and for other purposes.

parasite, a plant or animal living upon another plant or animal.

parboil, to boil until partly cooked.

pasteurize, to check or prevent fermentation in fluids.

pastry, food having a crust made of paste.

pastry bags, bags fitted with tubes for putting on meringue or whipped cream.

patty, a case made of puff paste with a cover; it is filled with some creamed vegetable, meat, or fish.

peanut butter, a paste made of ground peanuts and water.

pectin, the substance in fruits which causes the juice to jell.

pickling, preserving food in a salt or acid liquid.

pilaf (pi läf′), rice boiled with meat, fowl, or fish.

pimento, allspice.

pinoche (pi nō′che), a kind of soft candy made of brown sugar, usually with nuts.

pinon (pē nyōn′), an edible seed of a certain pine.

pistachio (pis tä′çhi o), a tree of Southern Europe having a greenish seed.

poach, to cook (an egg) by breaking (it) into boiling water.

pork, the flesh of the hog.

porterhouse, steak or roast cut from beef just forward of the sirloin.

pour batter, a batter thin enough to pour.

process butter, butter that has been made over, or renovated.

proteid, a food containing carbon, hydrogen, oxygen, nitrogen, and sulphur, and often phosphorus and other elements.

ptyalin (tī′a lin), the soluble ferment of saliva.

purée (pü′rę′), a thick cream soup.

ragout, a dish made of pieces of meat stewed with vegetables and highly seasoned.

ramekin, an earthen dish for baking various foods prepared with bread crumbs.

rancid, having a rank taste.

réchauffé (rā′shō′fā′), a warmed-over dish.
refining, freeing from impurities.
refuse, any part of an article of diet that cannot be used as food.
relish, something taken with food to render it more palatable.
remove (rā′mo vā′), the course preceding the roast.
rennet, the lining of the stomach of a calf, used for curdling milk
rennin, the active constituent of rennet.
renovated butter, poor or rancid butter made fresher and sweeter by melting and washing in cold water and a solution of caustic soda.
ricer, a utensil for preparing mashed potatoes for the table.
ripening of cream, the souring of cream by the right kind of bacteria through the use of a starter.
Roquefort (Rōk′fôr′), a highly flavored, blue-molded cheese, made from the milk of ewes and cured in caves.
rolled cookies, cookies made by rolling the dough thin and then cutting.
rosette, a pastry case, more shallow than a timbale, in which a cooked mixture or fresh fruit is served.
round steak, beef cut from the round of the hind quarter.
saccharine, a coal-tar product remarkable for its sweetness.
salsify (săl′sĭ fy), a plant the root of which tastes like oysters; vegetable oyster.
samovar, a metal urn used for making tea.
sautè (sō tę′), to cook in a little fat.
scalloped, baked with cracker or bread crumbs.
score, to make shallow cuts across a surface.
scrambled (eggs), eggs cooked with milk.
searing, heating the surface of meat so intensely hot that a coat of hardened albumin is formed.
service plate, the plate upon which the plates of the course of a dinner (except the last course) are placed.
sherbet, a flavored water ice.
shortening agents, materials added to a batter to make it tender.
shredded, cut into fine strips.
sieve, a utensil with a fine mesh wire, used for sifting.
silence cloth, a thick pad or cloth laid under a table cloth.
simmer, to boil gently.
single cream, cream 12 hours old.
sirup (sĭr′up), a thick, sticky liquid.
sirup gauge, a graduated tube with a weighted bulb used to determine the quantity of sugar in a sirup.
skewer, a wooden or metal pin for keeping meat in form while roasting.
skimmer, a utensil to clear scum from a liquid.

soggy, heavy and wet.

soluble, that may be dissolved in liquid.

soufflé, (sōō′flā′) a spongy dish made of eggs, milk, and flour, beaten till very light, and mixed with cheese, fruit, or other flavoring.

spaghetti (spa gĕt′ĭ), a kind of macaroni made into smaller tubes.

spatula, a flexible, thin-bladed knife.

specific gravity, the weight of a substance compared with an equal volume of water.

spinach (spĭn′ăj), an herb cultivated for its leaves, which are eaten boiled.

sponge-cake method, a method of making batter for cakes without beating.

spore, the round body inside of the parent organism by the formation of which bacteria multiply.

stale, not freshly made.

starter, some soured skimmed milk containing only lactic acid bacteria.

stearin, a constituent of many animal and vegetable fats and oils, characterized by solidity. When present in quantity, it raises the melting point of the fat.

sterilize, to render free from bacteria by heat or chemical action.

stew, to cook slowly a long time in a small quantity of water.

stock, a liquid containing the soluble parts of meat extracted by cooking.

sucrose, a form of carbohydrate cane sugar.

suprême (sü′prâm′), white sauce made by boiling down meat or chicken bouillon, then adding soup stock, mushrooms, or other vegetables and seasonings.

Summer Yellow, a kind of cottonseed oil refined by heating the oil and allowing it to settle.

sweetbreads, the thymus glands and pancreas of calves.

tannin, a strong acid found in tea.

tapioca, a coarse-grained preparation of cassava starch obtained by heating it while moist.

tenderloin, a strip of flesh, either beef or pork, on either side of the backbone under the short ribs.

tendon, a tough cord or band of white fibrous connection tissue fastening the muscle to some other tissue.

theine (thē′ĭn), the same as caffeine.

theobromine, a substance, found in cocoa and chocolate, similar to the caffeine of coffee.

thymus glands, the glands in young lambs or calves, used for food called sweetbreads.

timbale (tăn′bäl′), a seasoned preparation of chicken, cheese, or fish cooked in a drum-shaped mold; also a pastry case filled with a cooked mixture.

trichina, a parasite of pork causing a fatal disease in human beings when infected pork is eaten.

tripe, a part of the stomach of the cud-chewing animals, especially of the ox kind.

tuber, a fleshy underground stem.

tureen, a large, deep dish to hold soup for the table.

utensil, an instrument used in the kitchen.

veal, the flesh of calves.

vegetable brush, a brush used for cleaning vegetables.

vegetarian, one who does not eat animal food.

vermicelli, (vẽr′me sĕl′ĭ), a paste of a small grained wheat forced through small pipes till it takes a slender, worm-like form.

virgin oil, the first oil extracted from the olive.

viscera, the internal organs of animals.

viscosity (vis cŏs′ity), the quality of being viscous.

viscous, adhesive or sticky and having a ropy consistency.

volatile oil, the same as essential oil.

water-glass, a stony powder used in preservation of food.

waterhouse test, a test for detecting substitutes for butter.

whey, the water part of coagulated milk.

white stew, a stew made by putting the meat in cold water, which is then brought to the boiling point.

Winter Yellow, cottonseed oil with the palmitin extracted, used in making butter substitutes and compound lard.

wire whisk, a utensil for beating eggs.

Worcestershire (sauce) (Wŏŏs′ter shĕr), a highly seasoned relish used with meats.

yeast, a substance consisting of the cells of certain fungi, used as a leavening agent.

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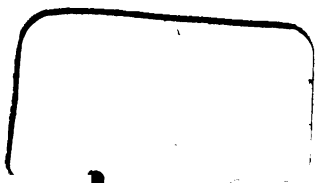

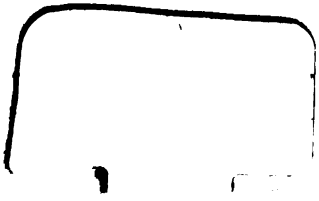

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